

CTO

The Magazine for Information Executives

How Can the **WEB** Make Better Doctors?

What **TECHNOLOGY** Is Key to a Casino's Profitability?

Why Should a Brick-and-Mortar Retailer **INVEST** Online?

How Can You Leverage **VALUE** over Time?

Who Knows the Answers? Our Winners!

MEET THEM STARTING ON PAGE 68

The Ninth Annual

Enterprise Value Awards



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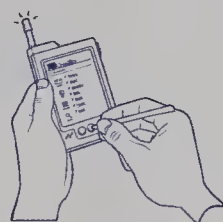
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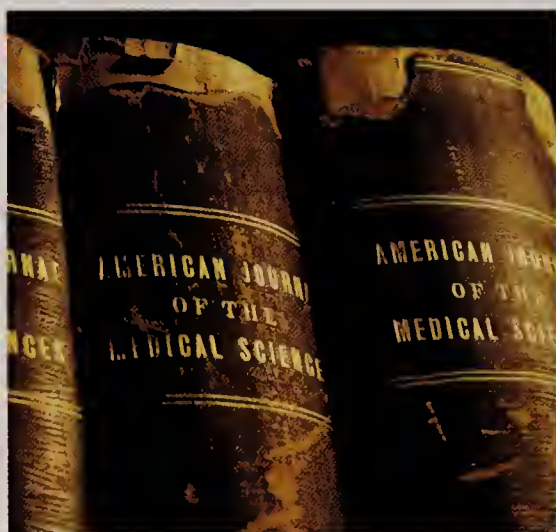
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Not Just Another Pretty Interface.



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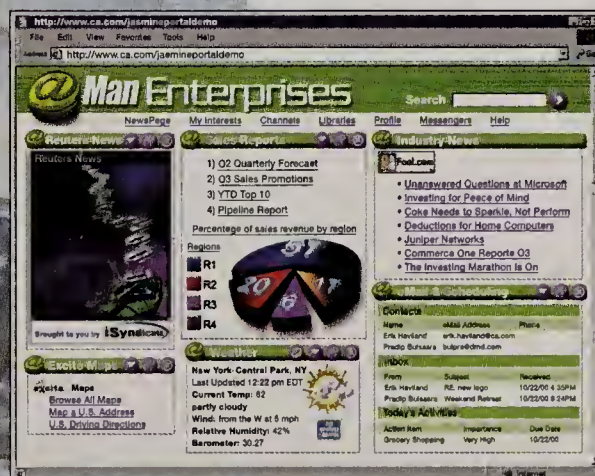
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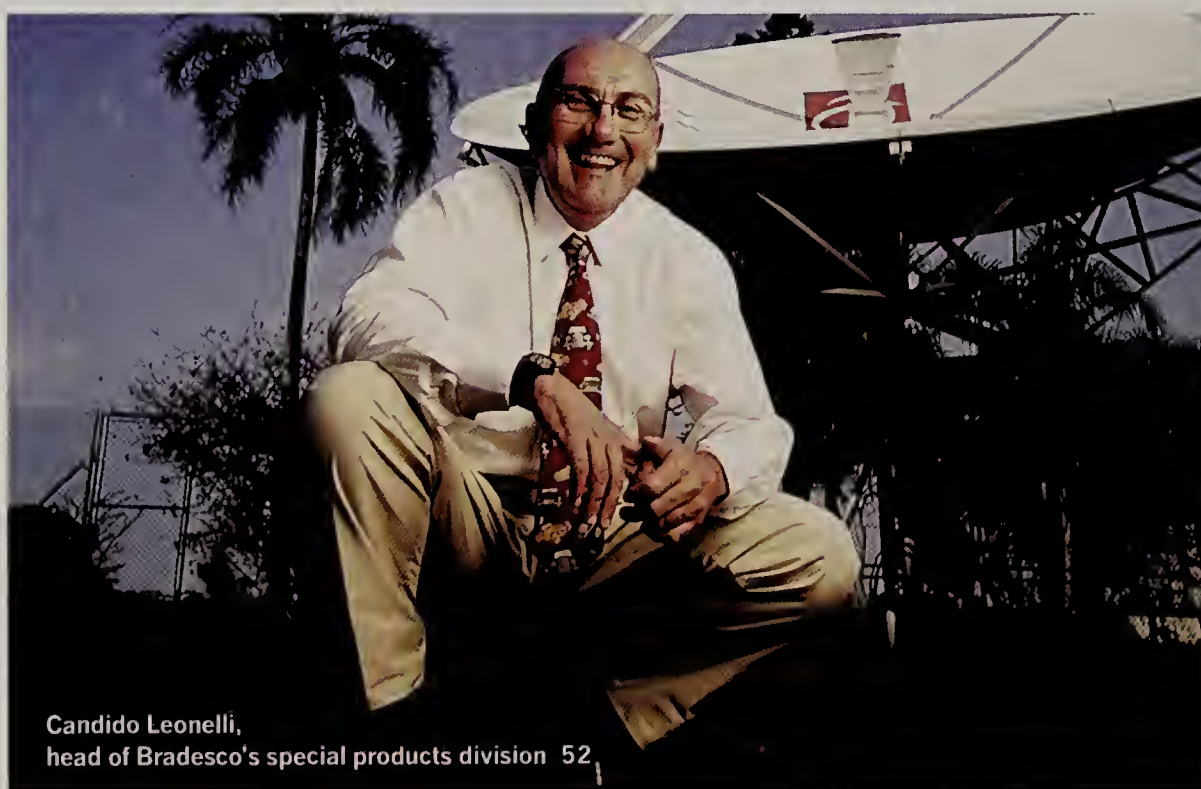
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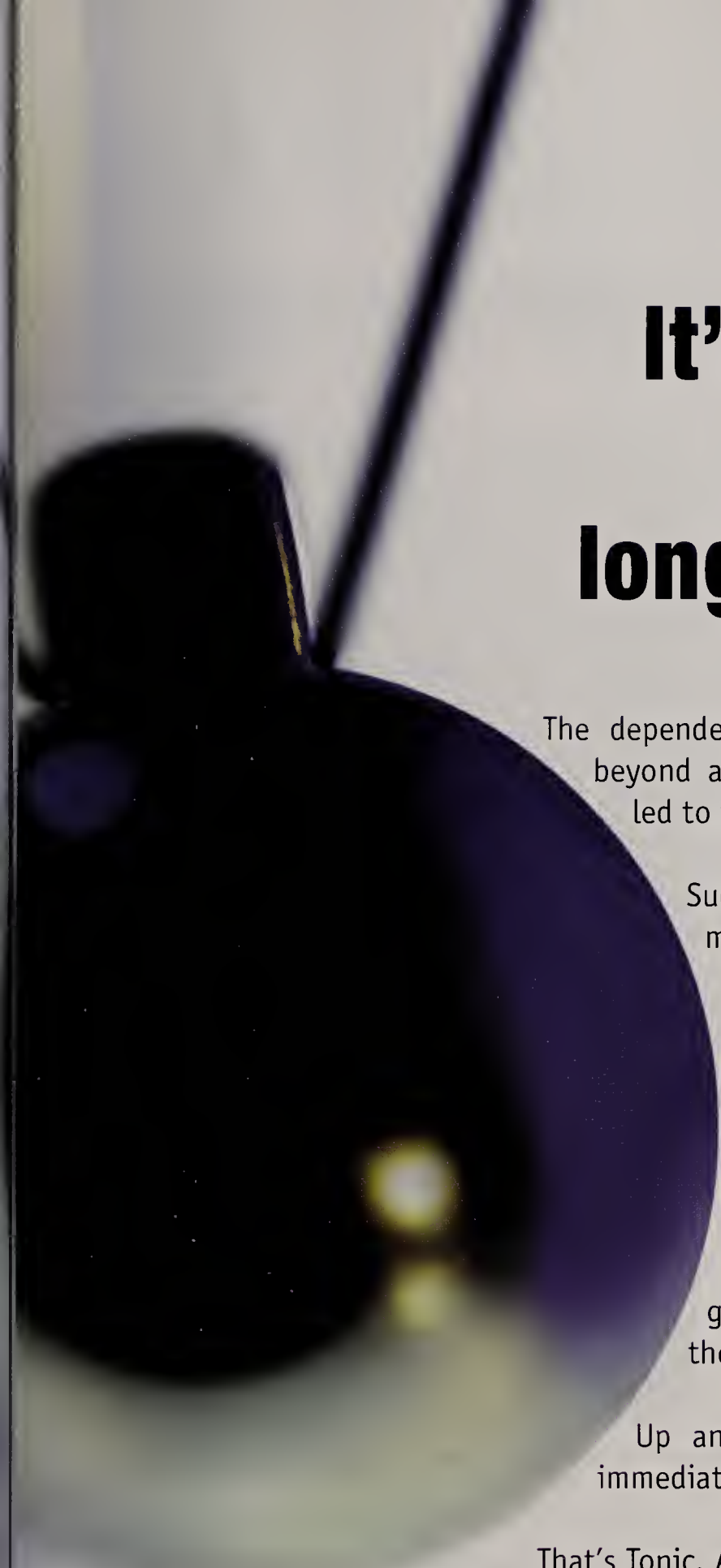
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OPINION ONLINE

Mark Polansky on Executive Career Issues

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Zach Nelson on Security

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“Models are old at 22,
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From the Editor

lundberg@cio.com

Value Judgments

The year 2000 was an amazing one for U.S. businesses. With Y2K safely behind us, companies were free to focus on exploiting the Internet. And with the economy booming, most companies had the money to invest in the technology and expertise to get themselves on the Web.

The mantra for developing online business initiatives was speed, speed, speed. Weren't sure what the right move was for your business? Didn't matter—you had to get something out there fast, damn the costs. This attitude made multimillionaires of Internet consultants, who couldn't pull in the money fast enough. (One fellow I know considered buying a private jet so that he wouldn't waste time waiting in airports. "If I can close another piece of business instead of waiting for a flight, it's worth the cost," he declared.)

Last October, we gathered in Boston's historic Faneuil Hall to choose the winners of this year's Enterprise Value Awards. Given the party atmosphere in the economy, I wondered whether the judges might be less demanding in their quest for value—if they too might be swept up in the sheer glory of cool new innovations, regardless of the value proposition. I needn't have worried. If anything, the judges were more demanding than ever.

It's not that they don't recognize or appreciate innovation (or efficiency or pure technical accomplishment, for that matter);



they do, and they noted that appreciation. But this award, they unequivocally declared, is first and foremost about value to the enterprise. If an applicant couldn't prove the real and significant value of its IT investment, it had no place winning this award. Not only did the judges demand real value, if a company hadn't transformed its business—and even influenced its industry—it shouldn't win either.

This year's process worked well, as always, thanks to the efforts of a handful of people: Rick Swanborg, my cochair on the awards, and the review board he heads (see "Getting Tough," Page 136); Mindy Blodgett, *CIO*'s special projects editor; Senior Editor Elana Varon, who led this year's issue team; Chandra Tallman, our design coordinator; Editorial Operations Coordinator Karen Zirpola, who orchestrated the judging event; Marketing Communications Director Sue Yanovitch, who organized the film crew to capture the proceedings for this year's awards ceremony; and Special Projects Assistant Cristina Sousa, who took care of our winners once they were selected. There are many more people (the judges, writers and editors, and, of course, the applicants) whose interest, talents and dedication to excellence took this year's awards program and this issue to a new level. My thanks to you all.

Allie Lundberg

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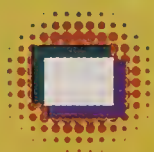
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Reader Feedback

BETTER LATE THAN NEVER

I just found "ERP Training Stinks" [June 1, 2000] on the Web, and I totally agree. I am a technical analyst working on the HR team of an SAP implementation. So far, I have attended integrator-provided level-one and level-two training, plus five SAP training classes. Level-one training was so high level, it wasn't worth the time, even for company executives. Level two was the equivalent of HR end user training on how to hire someone. It gave a fairly good introduction to SAP's HR screens and infotypes. If this level-two training had been used as a foundation for further training for everyone, it probably would have been good. However, only technical analysts such as myself have been given the opportunity to continue their SAP education. The business analysts, limited to on-the-job training, have been struggling.



Unfortunately, the level-three training that I have received also falls short. Although each class does teach the process for accomplishing HR tasks, the underlying process flow and data dependencies are not explained. There are a number of critical fields that impact many different areas of human resources, but no information is given anywhere that describes the impact of their design and configuration. The only way to learn is through trial and error. I am writing my own training guide,

and hopefully I will be able to develop a good enough understanding to teach the business analysts and end users.

Lois Rose
Technical Analyst
Information Spectrum
California, Md.
lois_a_rose@yahoo.com

A "MICHIGAN CONNECT"?

"The Road Less Traveled" [Oct. 15, 2000], about the efforts made by Berkshire County, Mass., to get modern

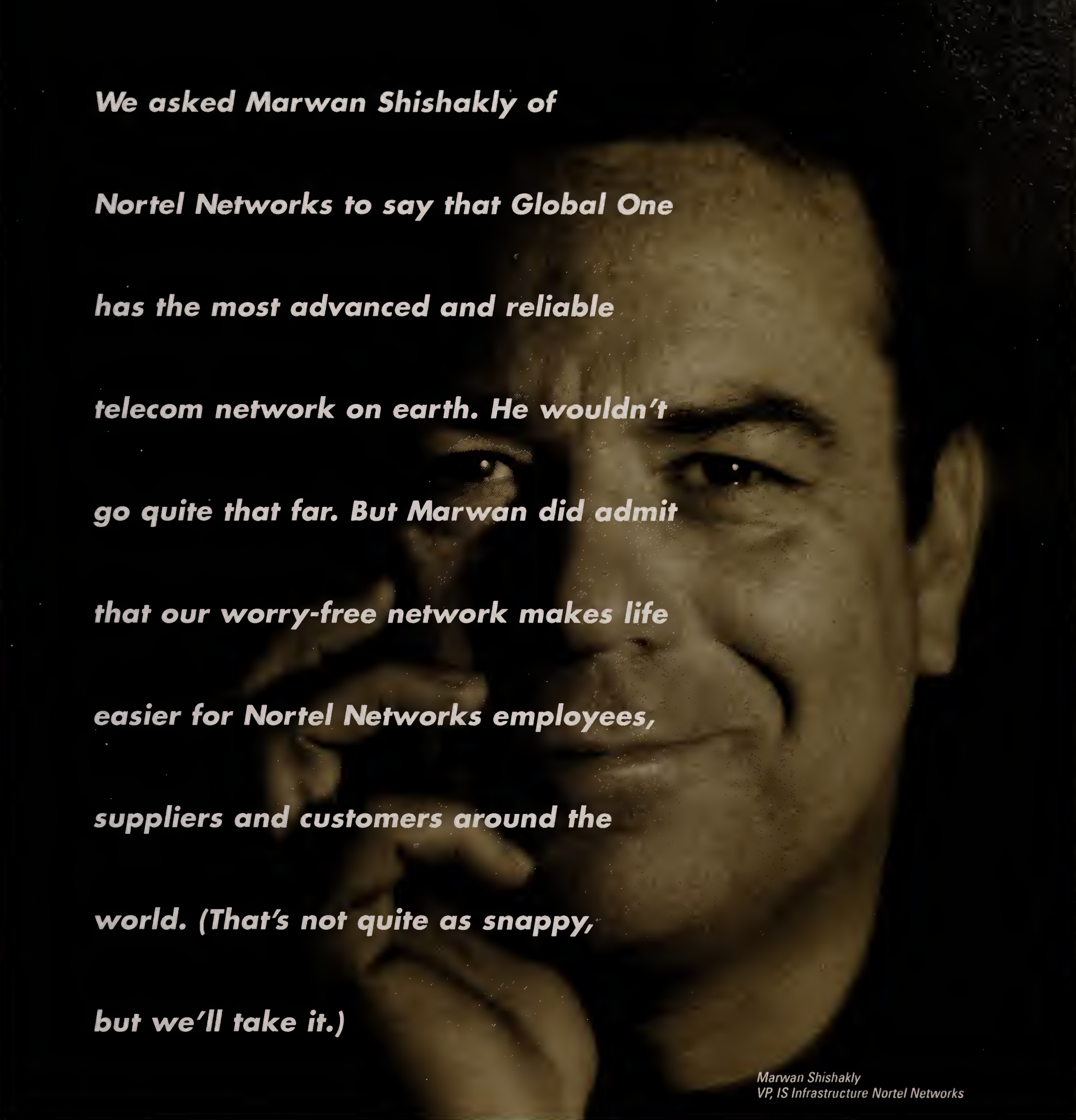
telecom service at fair prices, was excellent and points out one of the big issues facing America today. To paraphrase a recent telecom industry ad, "the big fat phone companies don't care" about small-town America. The article failed to mention whether the incumbent telecom carrier even bothered to reply to the RFP that the Berkshire Connect folks sent out. It would be interesting to follow up and see if that carrier took the Berkshire Connect experience as a wake-up call to provide better services elsewhere to avoid being replaced in other communities or whether it is still arrogantly ignoring the needs of its rural customers.

I recently moved from an area of Michigan that's rich in telecom services to a small town served by a second-tier phone company. Although the move was only 15 miles, it put me and my home office in an area that is living, at best, in the late 20th century in terms of telecom services: no DSL, no cable modem service, and only a marginal ISDN offering available. Worse, as far as I can tell from my research, there are no plans for any of these high-speed services in the near future. Perhaps it's time to pursue the creation of a small-town cooperative, similar to Berkshire Connect, in Milford, Mich.

Norm Werner
Business Development Manager
EMC Corp.
Milford, Mich.

HONESTY IS THE BEST INTERNET POLICY

Thank you for the Fine Print column "Rules to Surf By" [Oct. 15, 2000]. It's refreshing to read an article that focuses



**We asked Marwan Shishakly of
Nortel Networks to say that Global One
has the most advanced and reliable
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go quite that far. But Marwan did admit
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Marwan Shishakly
VP, IS Infrastructure Nortel Networks

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With the IPO market dried up and dotcoms crossing the chasm, it's kind of in vogue to declare the revolution over.

on the serious risks of legal liability and not just on "Big Brother" issues. It is important for companies to clearly state their Internet usage policies, but it is just as important to enforce these policies. Companies can create a middle ground for employees by educating them on the issues surrounding Internet use and the factors that warrant an Internet usage policy.

Many of our clients' policies allow for surfing and do not restrict most Internet use. We also find that most employees don't mind as long as their organization is honest with them. Employees often agree with a policy when they understand the risks involved. I am sure that Internet policy management will continue to be a very hot topic.

Ray Boelig
CEO and President
Elron Software
Burlington, Mass.

DON'T IGNORE DOTCOM COMPETITION

With the IPO market dried up and dotcoms crossing the chasm, it's kind of in vogue to declare the revolution over. Case in point, the Oct. 15, 2000, New Economy column ["Slim Pickings in Cyberspace"] makes the case that Internet businesses are inherently lower-margin than their offline competitors.

As the author points out, his column is built on the key assumption that Internet and brick-and-mortar markets will become (stay?) separate. Only if they are in separate or noncompeting markets will Internet companies' margins shrink relative to offline companies. If the Internet companies do com-

pete (that is, if consumers view Internet shopping as a substitute for offline) then margins will shrink across the board, and higher-cost offline competitors will lose.

Let's examine that assumption, since the consequences could be serious for any company that takes it as an excuse for complacency. Great American companies like General Electric, General Motors and Xerox ignored cheap Japanese substitutes (competitors) for a long time, thinking that Japanese goods were too inferior to compete with their own "high-end, high-quality" American-made goods. As soon as the Japanese got their quality in order, they massacred the Americans: In consumers' minds they were substitutes. Incumbents always have a hard time seeing threats: They look for excuses to keep conducting business as usual until all the excuses are used up. "Slim Pickings in Cyberspace" unfortunately legitimizes such complacency.

Most "traditional" companies that have gone online have done so as a reaction to startups, but more and more, they are taking the lead in disruption. For example, GM is making aggressive strides toward online auto sales, and the airlines are joining forces to sell excess tickets online. All the B2B marketplaces that sprang up during the past year are also aimed at lowering costs and prices for all players.

Again, the question is whether consumers view online services as substitutes or not, and I think the overwhelming evidence is that they do. After all, every online customer today

was an offline-only customer a few years ago. If this is the case, competition will increase and margins will fall for all players. Disregarding online competitors is a far riskier stance, therefore, than even the riskiest dotcom stock.

Mark Bünger
Managing Director
Icon Medialab
San Francisco
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Stan Liebowitz replies: Mr. Bünger has identified the wrong key assumption in my column. My key assumption was that use of the Internet lowers costs. As such, margins will be expected to be smaller whether e-business companies and brick-and-mortars compete with one another or they compete only within their categories. This is important in trying to value e-businesses or e-components of companies, where expected margins are usually multiplied by expected revenues to determine expected profits and capitalizations.

I agree with Bünger that it is a mistake to become complacent and ignore threats from online competitors (or anyone else), and I certainly hope I haven't legitimized any such complacency. Nevertheless, I do not share the view that online services are necessarily good substitutes for brick-and-mortar services, nor do I believe that they are always a serious threat. Whether they are or are not depends on the particulars of the case. I plan to write another column on that question, after which, perhaps, I can be accused of creating complacency among some brick-and-mortar companies.

WHAT DO YOU THINK?

Send your thoughts and feedback to letters@cio.com. Letters may be edited for length or clarity.



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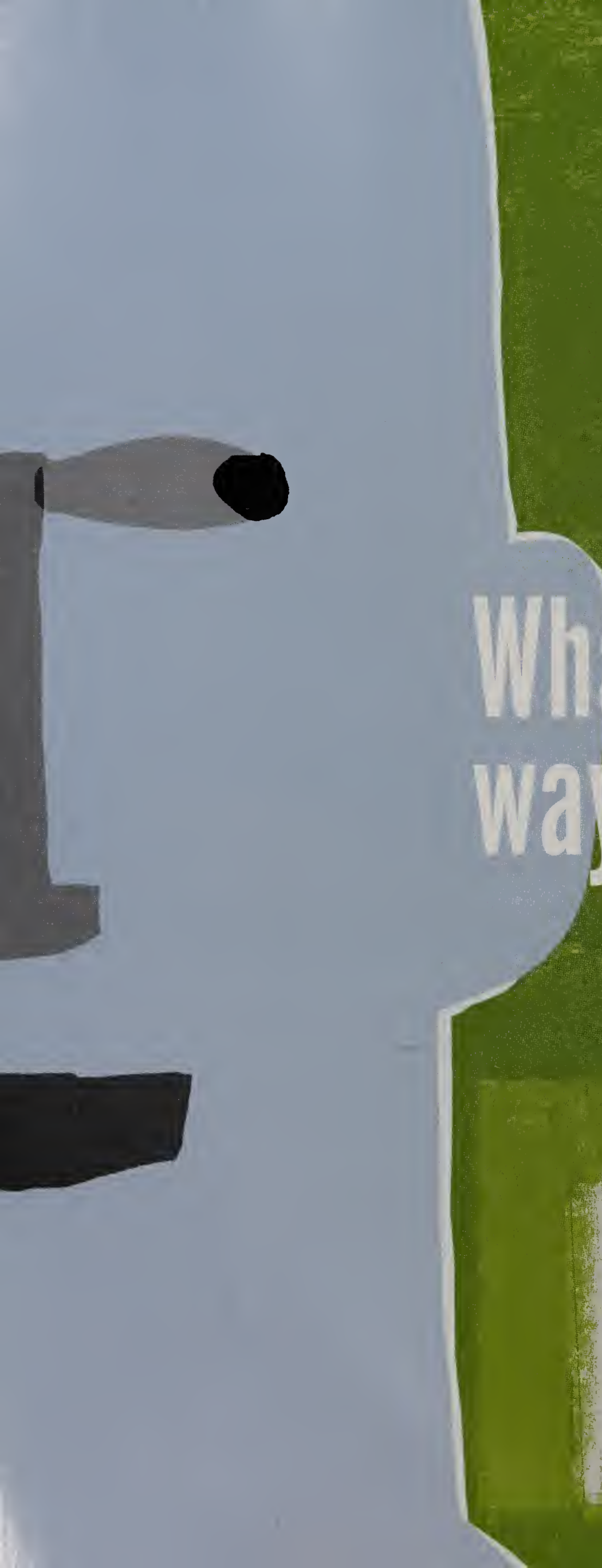


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trendlines

the **NEW** the **HOT** the **UNEXPECTED**

Edited by Sandy Kendall and Sara Shay

DECISION SUPPORT

Sheltered Lives

By Susannah Patton

STEPHANIE ADKINS TRAVELED from Sault Sainte Marie, Mich., to Huntington, N.Y., to meet Harry after reading his life story on the Internet. Laura Leaver drove from Newton, Mass., to Albany, N.Y., to find Eclipse after seeing his cute face on the Web. Adkins and Leaver weren't looking for romance, they were taking part in one of the Web's most recent success sto-

ries: pet adoption. Harry, an 8-year-old, blind Maltese, and Eclipse, thought to be a Treeing Walker Coonhound, are two of thousands of stray pets finding homes each year as shelters across the country go online.

Leaver found her dog at a website maintained by Peppertree Rescue in Albany, one of about 1,500 shelters in the United States and Canada that are active members of an online network called Petfinder.org. Started in 1995 by husband-and-wife team Betsy and Jared Saul of Hillsborough, N.J., Petfinder lets prospective pet owners browse a national database by the animals' size, sex, age, breed and location. Dogs and cats dominate the site, but a surprising number of potbellied pigs, iguanas and goats also seek owners. "The Internet has revolutionized pet adoption," says Betsy Saul, an environmental scientist who now works full time maintaining the Petfinder site.

Ed Powers, director of opera-
Continued on Page 32



UPDATE

Virtual Election



AND THE WINNER IS...

Readers responded to CIO's October 2000 poll and picked Hewlett-Packard CEO

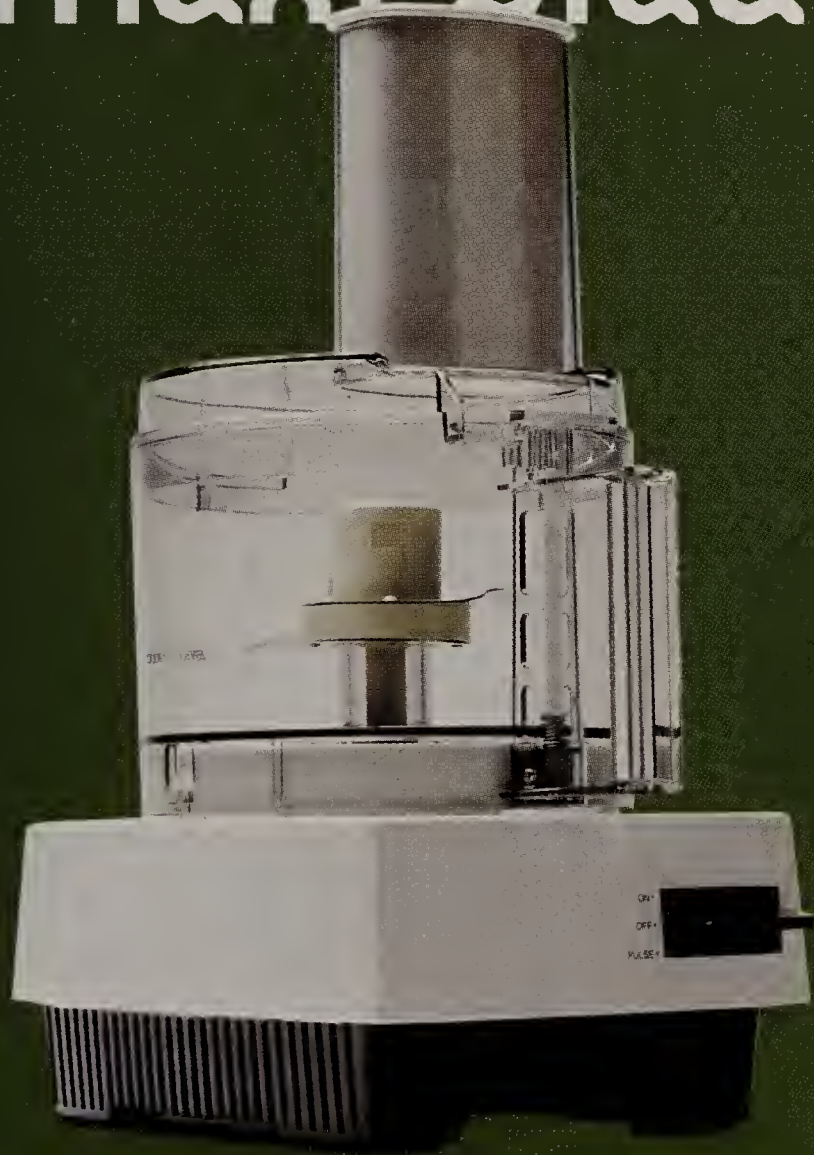
Carly Fiorina, 46, for the first CIO of the United States. She was elected from a slate of 10 candidates for this at-press-time hypothetical position. (None of the nominees asked for a recount.) Fiorina, who has a reputation as a visionary thinker, is engaged in a major overhaul of HP. Last November, she was appointed by former President Bill Clinton to a task force on wiring the developing world. Fiorina declined our request for an interview.

Visit CIO.com to read our original story, "Hail to the Chief...Information Officer," view the complete survey results, and look for future updates on the IT policies of the Bush administration.

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—Marcus Clarke, president and founder, Meridian Group

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Sheltered Lives

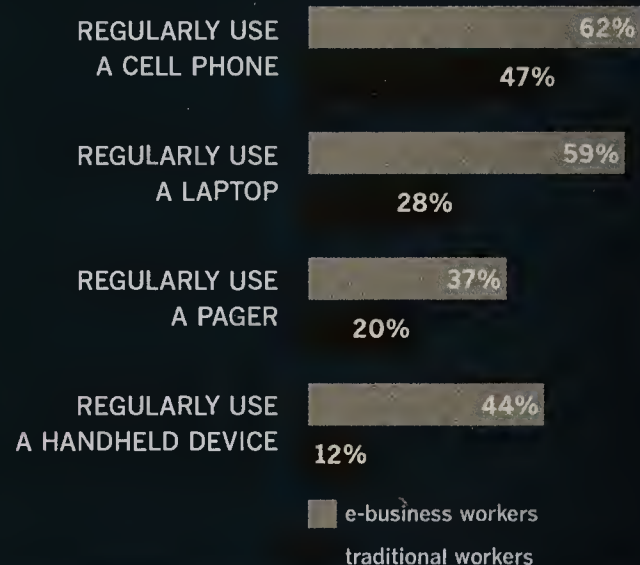
Continued from Page 30

tions for the Animal Rescue League of Boston, says adoptions are up 14 percent since the shelter signed on with Petfinder last year. Powers says, "We're finding that when people do their homework on the Web, they are making decisions that are intellectual rather than purely emotional. That can make for better adoptions."

Petfinder leads the pack, but other sites are popping up to foster pet adoption. Philip Greenspun, founder of ArsDigita, a software company in Cambridge, Mass., was inspired by his Samoyed, Alex, in 1999 to start ArfDigita.org, an online animal adoption center. Last summer, two students from MIT and one from Tufts University School of Veterinary Medicine toured the country to teach shelters how to use ArfDigita's program. "Shelters are close to the bottom when it comes to technology awareness," says Randy Graebner, an ArsDigita employee and cocreator of the ArfDigita site. "A lot of them don't even have computers, but it seems to be really picking up."

Mobile Mo' Betta?

A Pitney Bowes study reports that e-business workers rely more heavily on mobile devices than their counterparts at traditional companies. Ironically, the same study showed that e-business workers receive fewer messages per day but report "feeling overwhelmed" more often.



Maynard BY DARRIN BELL AND THERON HEIR



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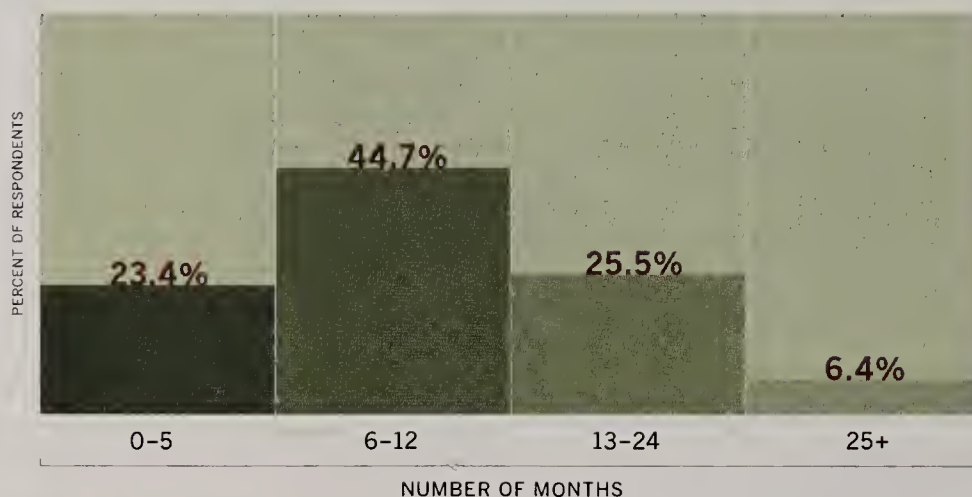
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Compiled by
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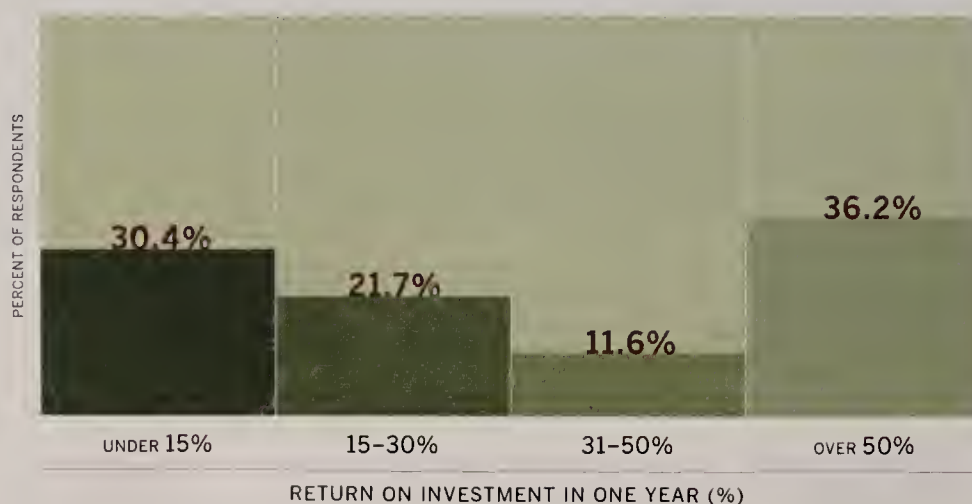
Considering E-Commerce ROI

EVERY PROJECT, even e-commerce projects, should go through a return on investment calculation to help determine its value to a company. Researchers at IDC (a sister company to *CIO*'s publisher, CXO Media) advise executives to consider factors normally outside of IT's scope, such as marketing costs, when calculating e-commerce ROI. Time for projecting break-even e-commerce returns also shrinks. In a survey of 94 B2B and B2C e-commerce website managers, IDC found that more than two-thirds (68.1 percent) broke even on their website development investment in a year.

Typical Time Frame Needed for Web Sellers to Break Even with Their E-Commerce Sites



Return on Investment of Web Sellers' E-Commerce Sites



Best Practices

1. Use a consistent ROI yardstick. ROI means subtracting expenses (both internal and external) from benefits (such as productivity gains and new revenues), expressing the difference as net present value on an after-tax basis and dividing this by the initial investment.

2. Base your e-commerce ROI calculation on a short time frame. Intense competition, quickly changing target markets and the rapid pace of technology advances mean that benefits from e-commerce investments are short-lived. "E-commerce projects should be profitable in two years, and certainly no later than three years," says Thomas Oleson, a research director at IDC.

3. Quantify "soft" benefits. The strategic items measured can include soft benefits such as better communication with customers and improved employee morale. The benefit must produce a quantifiable result based on specific measurements, like fewer sick days taken or lower turnover rates.

4. Factor in global issues. It costs more to maintain multiple websites using a number of languages and currencies. And it costs more to deal with export controls and serve customers in regions with poor infrastructure.

5. Think beyond traditional IT boundaries. E-commerce costs may have more to do with marketing than with buying additional hardware and software. IDC found companies annually spent 50 percent to 100 percent of the initial set-up costs on website maintenance and upgrades. Site promotion costs represented 34 percent of maintenance costs.

SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS., 2000

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For more on Qwest's unique approach to integration, visit us at qwest.com or call 1 800 RIDE QWEST. Then you can get on with running your business.



DATA STORAGE

Dear Diary

By Stewart Deck

"WENT A HUNTING in [northern Virginia]. Found a fox about One Clock and killed it about 3 O'clock." (Jan. 11, 1772)

Though these might have been the words of any gun-toting Colonial gentleman, they were penned by none other than the father of our country. From 1768 to 1799, the first President George W. kept a variety of daily diaries, including travel tomes and notations of weather at Mount Vernon and his other farms. For a good read this Presidents' Day, delve into *The Diaries of George Washington*, recently published online by the Library of Congress.

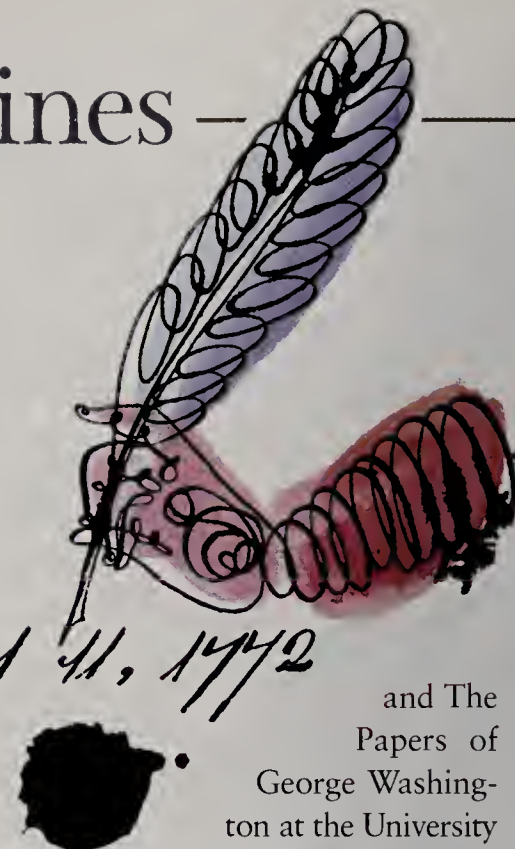
The revelations are pretty tame by today's standards—among his regrets, for example, is that he began his Revolutionary War entries at the end of the war at Yorktown rather than at the beginning. He also writes of adventures in animal hus-

bandry and horticulture, as in this entry about (naturally) his cherry trees: "On the 10th of March when the Cherry buds were a good deal Swell'd, & the White part of them beginning to appear, I grafted the following Cherries...." (March 10, 1775)

Washington used his diaries primarily to remind him of daily events, not to record his innermost feelings and aspirations. As a result, some of his thoughts might seem a bit cold. To record the death of his beloved epileptic stepdaughter, for example, he wrote: "At home all day. About five oclock poor Patcy Custis Died Suddenly." (June 19, 1773)

A joint project of the Library of Congress, The University Press of Virginia

January 11, 1772



and The Papers of George Washington at the University of Virginia, the collection includes transcriptions

of some 2,300 diary entries. It also contains images of individual pages, so that graphologists can study Washington's penmanship and see how his writing drifts off the page as his eyesight begins to fail.

This collection is the first electronic publication of the work of the Founding Fathers Papers Projects, established by President Truman in 1950. To dig into Washington's diaries, point your browser to memory.loc.gov/ammem/gwhtml/gwintro.html.



INFORMATION
MANAGEMENT

Read Like a Pro

YOU MAY THINK only readers are finding today's magazines a bit on the hefty side, but trust us, we editorial types have noticed too. At Folio: Show 2000, a conference put on by Folio, a trade association for magazine publishers, the issue of fat magazines was unavoidable. Rita Stollman, president of editorial management strategies in Brooklyn, N.Y., told of a company that brought in an expert to instruct staff on how to read a magazine—that is, how to take a more structured approach to reading a magazine. It's common sense, but worth sharing. Rather than be intimidated by thick magazines or (horrors!) thumb through them aimlessly, Stollman says to do the following:

1. Read the cover to see what's getting the biggest play.
2. Read the table of contents carefully to see what the stories are about.
3. Go through the entire issue only reading the headlines, introductory text, subheads, photo captions, quotations emphasized within the story, charts and graphs—basically anything that's highlighted. Together these elements should tell you different and important aspects of each story and allow you to understand its main points.
4. Then go back and read the appropriate stories as time allows.

Starting with this one, right?

—Sarah D. Scalet

"WHETHER SOMETHING IS TECHNICALLY POSSIBLE AND WHETHER THERE'S A BUSINESS CASE FOR IT ARE TWO DIFFERENT THINGS."

—Scott Nason, CIO and VP of IT services, American Airlines



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On the Move

Compiled
by Tom Field

Yaros Moves from Fox to Sony

TO PARAPHRASE a famous line from a movie, they made him an offer he couldn't refuse.

Justin Yaros, former CIO of 20th Century Fox, recently moved across town to be the new CIO at Sony Pictures Entertainment, the movie/TV division of Sony Broadband Entertainment. In this role, Yaros will be challenged to build strong

relationships with his business-side constituency and find new ways to integrate IT in the entertainment industry.

Yaros, who started his new job on Dec. 4, says he was attracted to Sony because it's a bigger company than Fox and presents bigger challenges. "There are greater financial resources available to IT," Yaros says. "The management team

is very committed to forging ahead in all areas of e-business."

While at Fox, Yaros strove to improve communication, and his efforts paid off. IS turnover was a relatively low 10 percent, while other studios are reporting turnover



Justin Yaros

of between 25 percent and 30 percent. After three years there, Yaros notes that his biggest accomplishment was being in the CIO's seat during the entertainment world's seismic shift from tradi-

tional to digital media. "I was able to create an IT mission, bring a concept of value to the organization and forge ahead in new areas of digital technology," he says.

Now he gets to do it all on a grander scale. The U.S.-based Sony Broadband Entertainment is a division of Sony Corp. of America, which is a business unit of Japan-based Sony Corp.

Player's Guide

Frederick Rudloff → DecisionOne

The 30-year IT veteran has joined DecisionOne as the Pennsylvania-based IT vendor's new CIO. Formerly vice president of IT and shared services at Advanta Corp., Rudloff will be responsible for DecisionOne's IT organization and strategy.

David R. Guzman → Owens & Minor

Formerly with Office Depot, Guzman has joined Owens & Minor as senior vice president and CIO. He will oversee IT infrastructure for the Richmond, Va.-based distributor of medical/surgical supplies, as well as its outsourcing relationship with Perot Systems.

Dave Ellard → EMC Corp.

EMC Corp., the Massachusetts-based information storage vendor, has named Ellard its new senior vice president and CIO. Formerly CIO at Boston Scientific Corp., Ellard is responsible for EMC's worldwide IS infrastructure, including systems development, operations, telecommunications, procurement and facility requirements.

Richard Schwartz → HarperCollins Publishers

The former CIO at Young & Rubicam has been named CIO at New York City-based HarperCollins Publishers. In this role, Schwartz will oversee the company's entire IT operation.

Jacqueline Michalik Frank → NUI Corp.

NUI Corp., the Bedminster, N.J.-based natural gas utilities company, has hired Frank as its new vice president and CIO. Frank, formerly the director of strategic planning and portfolio management at Hoffman-LaRoche, is charged with leading organizational and infrastructure change at NUI.



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ELECTRONIC COMMUNICATION

Dinner@Eight

By Matt Villano

YOU'RE ALL ALONE on a business trip, staying in a city you've never visited. You've heard the local food is quite good, but you're too tired to find it. You could:

- A. Dine on Cheez-its from the basket on the minibar
- B. Dial "0" for room service
- C. Fire up your laptop, make a reservation online, then go and eat like a king

These days, more and more travelers are opting for choice C, using a multitude of new online reservation sites. Many of them have been criticized for their inability to synchronize online requests with traditional ones. That's why sites like San Francisco-based OpenTable.com work so well. Instead of relying on standard e-mail, the way most restaurants do, restaurants using OpenTable can let customers see their reservation books in real-time. Users can log on and check the availability of tables for any given night. The result, says Susan Lally, the company's vice president of engineering, is that customers use the service the same way they might use Travelocity or Expedia to check the availability of a flight.

OpenTable's system runs off of wireless Internet services managed by OracleMobile.com, a new subsidiary of Oracle Corp. Restaurants pay from

\$500 to \$1,000 for a system designed to manage online and regular reservations; then customers can peruse availability for free online, making reservations with a mouse click.

OpenTable.com isn't the only company tackling instantaneous reservations over the Internet. Others that have recently upgraded their services to accept reservations in real-time include Foodline.com, which offers reservations

at restaurants in more than 25 cities, and RestaurantRow.com, which serves New York and Chicago—both sites with more cities to come.

"Real-time reservations are definitely the way to go in this business," says Robert Geleta, vice president of operations for San Francisco-based OnTheRoad.com, a company that provides (among other destination tips) online restaurant reviews for business travelers who want more than a simple rating from Zagat's. "When you're hungry and you're far from home, the last thing you want is a system that fails because it's slow."



HOT TOPIC



SECURITY

Safer Plastic

By Sarah D. Scalet

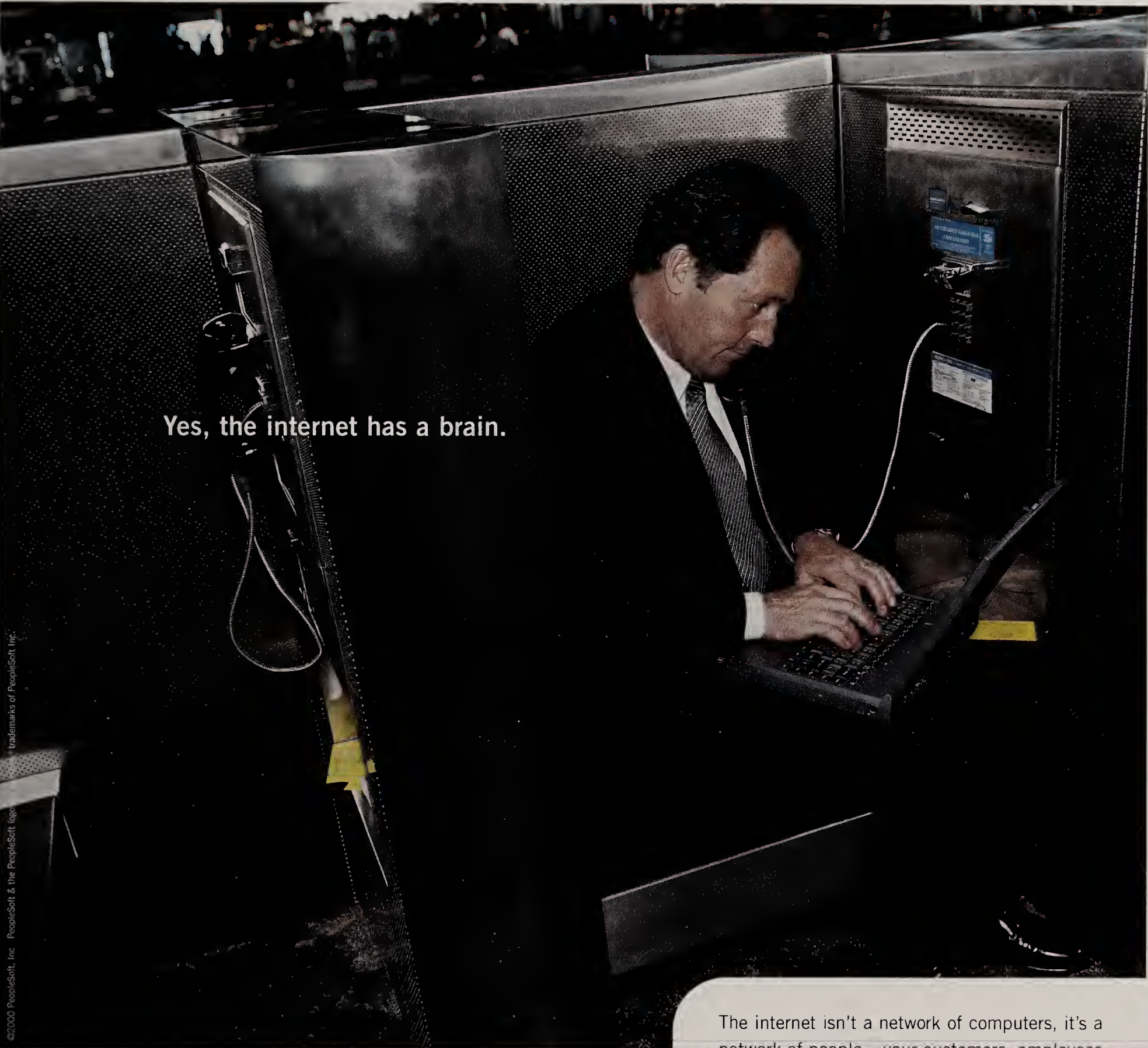
TO EASE CONSUMER fears of shady e-tailers and bright hackers—and save themselves and member

banks a bundle by avoiding unauthorized sales—plastic peddlers are trying to make the Internet a safer place to shop.

American Express has a new set of security and privacy offerings, the flashiest of which are disposable credit card numbers. With the free Private Payments system, customers can get unique credit card numbers linked to their standing account each time they make a purchase online. They thus avoid transmitting their "real" numbers and leaving them in the hands of online merchants. The single-use numbers don't work for recurring charges, of course, but they also don't work for thieves who try to make multiple purchases. Recently, Discover Card announced a similar program called Deskshop, which allows customers to obtain unique credit card numbers for use at a single store.

Visa is taking a different tack by developing the Internet equivalent to the codes stored on credit cards' magnetic stripes. Since online transactions don't allow a cashier to physically swipe the card for extra verification, consumers will instead use a password issued from and verified by the card-holding bank. Visa also unveiled a new set of security regulations that member banks, merchants and third-party service providers will eventually have to adhere to—straightforward requirements such as implementing firewalls and encrypting stored data.

Susan Grant, director of Internet Fraud Watch, a program of the National Consumers League, is encouraged by these efforts and says they're good for business. "Consumers have very strong concerns that affect their willingness to take advantage of the electronic marketplace."



Yes, the internet has a brain.

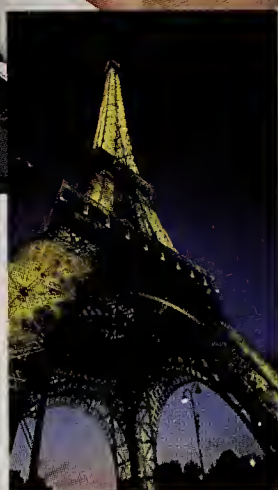
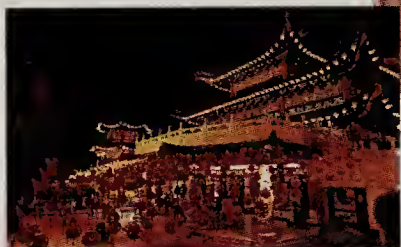
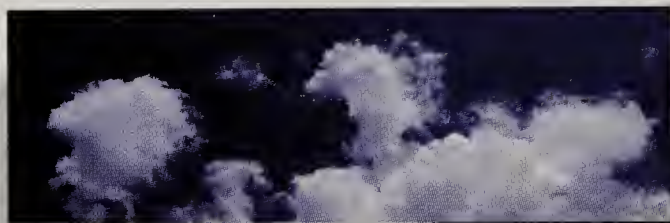
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*Source: IDC, December 1999. *Who Will be Leading the Global IT Services Industry in 2000?*: A Competitive Analysis by Mauro Peres, Sophie Janne Mayo.

Total Leadership

Carving Out Time

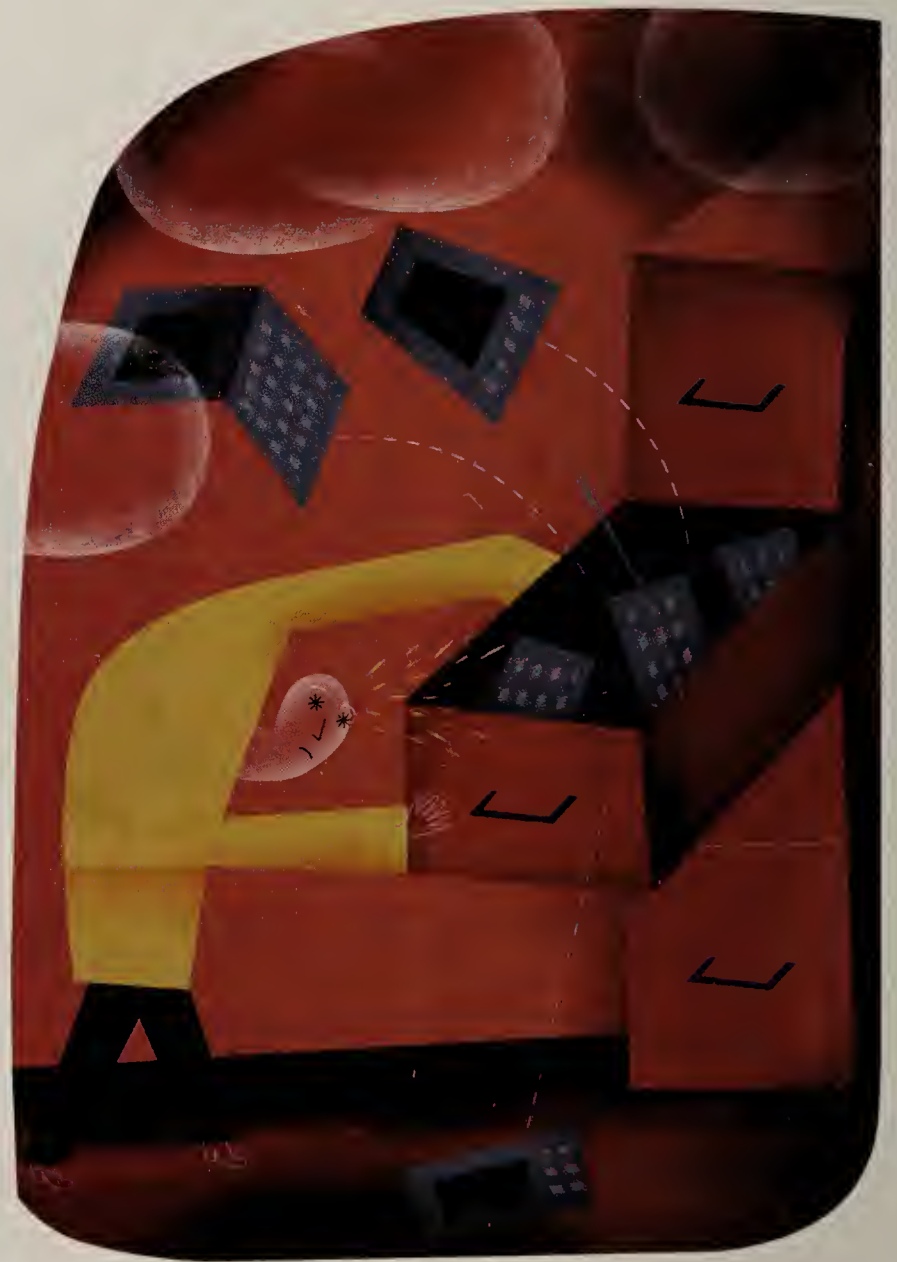
Here are some foolproof methods for managing your time and morphing into a better leader and person

BY PATRICIA WALLINGTON

HAVE YOU SEEN the ad for the cell phone service that touts the ability to roll your unused minutes to the next month? Wow! I'd like to be able to do that for the minutes in my day. Time is our most valuable resource these days. And there seems to be less of it each time I look. The growing demands on CIOs' time leave them wondering, When do I have time to lead? Days are filled with a multiplicity of activities, all of them seemingly important and urgent. Where is the time to think? Where is the time to build relationships with my peers? How do I stay on top of all my projects? Yet if I don't find the time to lead, I won't endure as a CIO.

And then, of course, there are these other just as important questions: Where is the time for my personal development? What about time for my family? This is not intended to be a Time Management 101 treatise. But having struggled with many of these issues during the course of my own career, I know there are some things you can do to improve the situation if you have the will and the discipline to do them.

There are some behaviors, such as perfectionism and procrastination, that are real time killers. Do you try to do every-



thing yourself in the belief that no one can do it better? Do you find it difficult to finish a task? This is the perfectionist in you. Try selective perfectionism as an antidote. Some tasks are really important, but others just need to get done. Learn to apply the "Theory of Good Enough" to these tasks. Get them done to the 90 percent level. Less than perfect can still be excellent. Delegate them to others. Use those tasks as training vehicles for those with less experience.

Do you put off decisions? Do you avoid certain activities and do only those things you like or feel comfortable with? Are you a chronic latecomer? Procrastination is the name of this game. The energy and time used to avoid or delay decisions is wasted, never to be reclaimed. I know how risky a CIO's decision feels in the uncertain world we live in. But it is important to keep your perspective. These are not life or death decisions. No one decision, regardless of how flawed, will destroy

ILLUSTRATION BY JAMES O'BRIEN

Making Information Make Sense

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you. But constant review and analysis—the hallmarks of indecision—could be even more detrimental to your career.

There are other behaviors that cram your calendar and leave you feeling dissatisfied at the end of the day. For instance, do you have an interruption-rich environment? First come, first serve? Anyone who drops in can get your attention, and you put aside whatever you are working on. Your availability is commendable, but you allow your priorities to be set in a casual manner. The resultant start/stop cost can be high. Respect your own schedule.

You are the one with the most influence over how your time will be invested. (Note I didn't say spent.) So take control of your time and tailor your approach to your own style and preferences. Do you work better in the mornings or late in the day? Schedule accordingly. Monday morning was always great for

sun so that I could bolt out the door. Another time when my travel schedule was particularly bad, I got home and found a note from my daughter: "Hi Mom, I'm 16, still 5 feet 2 inches. My hair is blond. Hope to see you before I graduate." Needless to say I curbed the travel for a while.

No one technique will work for everyone. But here's a general rule to live by: Learn to say no. This is always hard to do, but a great way to get more of your high priority things done. Practice saying it out loud. You can even say this to your boss, carefully, of course. One of my clients, the president of a large telecommunications company, told his CIO he had "an obligation to dissent." The president often did not know how long or how much effort something requested would take. The CIO was expected to let the president know when a request was not realistic or reasonable.

Learn to say no. You can even say it to your boss, carefully, of course.

me because the accumulations of the week were still in front of me. Do you relish interaction with people? Be sure that your periods of concentration contain breaks that give you the opportunity to refresh yourself with some people time. Know what gives you energy. Most of my writing is done during my power walks. Well, not actually pencil to paper (or keyboard entry), but that thinking time is often my most productive.

Preserving Family Time

Don't be a victim of tools. Set times to check e-mail and voice mail. People I worked with knew that I checked those first thing in the morning, so they made sure important messages were there early. Try to establish a nonbeeper time when you won't accept interruptions.

This is important when trying to keep some semblance of a home life. Evenings at home are especially important for working parents with school-age children, so "closing the virtual office" between the time you get home and the time your children go to bed may be a good idea. And stay in the moment. Focus on them. Don't let yourself be preoccupied with what's waiting on your e-mail or in your briefcase. I assure you it will still be there when you get to it. For me, saving weekends to have uninterrupted time with my family was really important. So I worked as long and as late as I needed to during the week so that I could go home for the weekend sans briefcase.

It helps if you have strong support from your family and can openly and honestly discuss these dilemmas. After one such family discussion, I agreed that I would not leave for work before sunrise. That worked until my husband found me sitting at the door, fully dressed, briefcase in hand, waiting for the

For those things that are most difficult to fit in, schedule the time formally until it becomes more natural. When I knew I wasn't spending enough time with my customers, I scheduled the hours each month until it became a habit. Don't do crazy things. My worst example is the time I went all the way to Japan for only 24 hours. Why put this pressure on yourself? A teleconference would have been almost as effective and cost much less in dollars and physical energy.

At the same time you are struggling with your own time demons, you have to create a supportive time environment for your staff. Allow your people to have the balance in their lives that you too are seeking. Accept a "no" and seek other alternatives. Be decisive so that their time is maximized and not wasted waiting for a long-delayed answer. Don't always rely on the same people for results. Spread the activities and let more junior people grow their expertise. Be calm. Effective leaders rise above the pressures of the day, projecting a calm exterior.

Forgive yourself if you don't get everything done. Most people do not finish everything on their list. I have a stack of things I want to read piled beside my fireplace. For months they speak to me, "Read me, read me," making me feel guilty. If they are not read by the end of the quarter, into the fire they go, my gift to myself. It's amazing how few things I am asked to read near the end of a quarter once people know about my gift! **CIO**

Do you know of any fail-proof ways to pocket time? Let us know at leadership@cio.com. Patricia Wallington, who is now president of CIO Associates in Sarasota, Fla., retired from Xerox Corp. in 1999, when she was corporate vice president and CIO. In 1997, she was inducted into the Women in Science and Technology Hall of Fame and named by CIO as one of the 12 most influential IT executives of the decade.



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Candido Leonelli: Bradesco is signing up 3,000 online customers a day.

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Money on the Net

The real-time infrastructure this Brazilian bank built to deal with hyperinflation paved the way for Internet business **BY DAVID LIPSCHULTZ**

BRAZIL EVOKES IMAGES AS VARIOUS AS THE mighty Amazon, Carnival and soccer. One thing that does not readily come to mind in association with the largest country in South America, however, is the Internet. Brazil is a developing nation, after all, with a huge underclass and poor telephone lines. It may seem surprising, therefore, that its premier banks have developed some of the most advanced and well-adapted Internet banking systems in the world. The leader clearly has been Bradesco, the country's largest bank; it had

\$940 million in pretax profits in 1999.

This happened by a simple twist of fate. Brazilian inflation from the 1970s through the 1990s was so severe it was declared hyperinflation. The *real* lost up to 3 percent of its value from one day to the next. If Bradesco was daunted, it didn't let on. "We built a system so that people could get their checks cashed in 24 hours, pay bills immediately and, if they wanted, employ services to send money out of the country," says Candido Leonelli, head of Bradesco's special products divi-



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sion, including its Internet operation.

While Bradesco may not be a model in other areas of technology, the network it built to deal with its hyperinflation crisis is a winner in online banking. The lessons to be learned from Bradesco's payment network development, though, go far beyond a textbook for fellow inflation sufferers. Bradesco's online banking system serves as a model for any global bank that wants to develop a safe, secure banking platform on the Internet and a means of gaining global reach with a well-crafted network. "Bradesco was well ahead of U.S. and European banks on the online banking curve," says Virginia Philipp, an analyst at TowerGroup, a leading financial services technology consultancy in Needham, Mass.

The bank's public payment network development began under harsh technological constraints. The Brazilian government had placed an embargo on much of imported technology in the 1970s. This included the networking technology that would have let Bradesco continue the necessary technological

arrive at a solution. "We bought a company called Scopus, and it built proprietary technology so that we could work quickly," says Leonelli.

The technology that Scopus built for Bradesco earned a place in the vanguard of distributed computing. In the 1970s, before widespread commercial use of the personal computer, Scopus had developed in-house software that hooked up computers across its network. This meant the company no longer had to rely on back-office workers plugging into a central mainframe, the system most banks in the United States were still using. Bradesco distributed information about customers from a bank teller's terminal through mini- and micro-computers and around the network.

"This allowed us to be the first to have real-time information at the teller level," says Leonelli. It also allowed an intrabank check to be cleared instantaneously. An interbank check could be cleared in only 24 hours, compared with the seven-day clearance delay imposed by most U.S. banks at the time.

While the digital age moved forward

"Bradesco was well ahead of U.S. and European banks on the online banking curve. By developing the technology itself, the bank was better prepared when the Internet came around."

-VIRGINIA PHILIPP, ANALYST, TOWERGROUP

evolution and give local branches the ability to perform real-time functions so that checks could be cashed fast. When Bradesco saw it needed to grapple with hyperinflation, it knew it would have to

so did Bradesco's technological insight. "There's no question that by developing the technology itself, the bank was better prepared when the Internet came around," says Philipp. So in the middle

AT A GLANCE

A Financial Carnival

The Goal: Easy and fast transfers of funds to avoid the ravages of hyperinflation.

The Pioneer: Bradesco, Brazil's largest bank, has 10 million customers; it had \$940 million in pretax profits in 1999.

The Solution: Built its own data communications software and infrastructure in the 1970s. Adopted the Internet as the transaction network in the mid-1990s.

ROI: Sixteen percent of Bradesco's customers use the Internet for transactions, the third highest percentage of customers online among banks worldwide.

of the 1990s, Bradesco launched an Internet service that centralized many of its operations for its customers, allowing them to pay bills, move money, and sign up for mortgages and other banking services online. ("Using a public network has definitely brought down a lot of cost," says Leonelli.) Soon, Bradesco's wealthier customers began adopting the Internet as a viable banking tool. The bank now has 16 percent of its customer base, or 1.6 million customers, online. That puts Bradesco in third place on the list of banks worldwide with the highest percentages of customers online, exceeded only by Bank of America and Wells Fargo, according to TowerGroup.

With the end of the technology embargo, Brazil's technology challenge has been simplified. Bradesco now uses soft-

A full-page background image showing a person climbing a tall, jagged rock formation. The rock is dark and craggy, with a person visible near the top. The sky is dramatic, with dark clouds and a hint of light at the horizon. The overall mood is one of challenge and achievement.

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ware from Microsoft to link its private intranet to an extranet, including a 128-bit encryption key as the security that allows access to the Internet through an ISP. The extranet is crucial, Leonelli says, because bank tellers are encouraged to sign up walk-in customers via the Internet, and Bradesco needs that outlet to the public network. This aggressive approach has moved customers online much faster. "Because we're getting 3,000 new customers a day, we should be ahead of Bank of America and Wells Fargo within a year," speculates Leonelli.

The chief obstacle facing Bradesco in increasing its number of Internet banking subscribers is economical, not technological. With 17.4 percent of the country's population (the world's fifth largest, at around 172 million) earning less than \$2 a day, The World Bank's report "Selected Development Indicators 2000/2001" ranks Brazil as one of the planet's worst distributors of wealth within its own borders. Since \$2 a day clearly doesn't allow a person to buy a computer and the accessories required for a connection, Brazilian banks will soon face a very large hurdle. Leonelli agrees, but hopes some of the plans, such as offering Brazilians cheap loans for computers and the gradual adoption of wireless application protocol, will help the poorer classes gain access through less expensive devices. Even if it is not widely adopted in its own country for years to come, the online banking culture that Bradesco developed is worthy of respect from the most advanced banks across the globe.

David Lipschultz, a former writer at *Forbes* and *SmartMoney*, is a freelance writer and editor living in Aspen, Colo.

Q & A | ALAN MATULA

A Cure for the Global Privacy Headache

Shell refuels global IT model

ALAN MATULA, GROUP CIO FOR ROYAL DUTCH SHELL, is developing a new model for governing a widely dispersed global IT enterprise. How dispersed? Matula supervises around 5,000 IT staff members who support Shell's 100,000 employees in 130 countries. Raised in Indiana, Matula moved to Shell's Holland headquarters in July after working his way up the company's management ladder for the past 18 years. Originally a business planner with an MBA and a degree in quantitative business analysis, he brings a business perspective to IT management.

Q: What is a global IT governance model?

A: An effective model makes some conscious choices about what IT segments the CIOs actually want and don't want to drive globally, in terms of critical corporate IT services.

You can drive a global strategy across 75 percent to 80 percent of the company, but there's about 20 percent where we're just forced to be a hell of a lot more flexible, because of the local cost structure, the ability to get local staff, the state of the telecommunications environment, or even the state of the country and the government.

We're working on a tiered governance structure that allows us not only to set some standards and make things stick from the top down, but also to engage with the right level of leadership across Shell. It's a brand-new model, and we're really hoping it will help push us in the future.

Q: How much will change in Shell's IT department?

A: IT governance follows business governance. Our country-based model is changing very rapidly into a business model with four key lines of business.

We also recognized that there are two pieces of an effective IT strategy. First there's the "what," or the "content," which drives the business needs at any given planning period. Then there's the piece of strategy about how to execute IT. And you need both. And both have a global and local component.

Everyone wants to get to a global model, but you can only go as fast as the business governance will allow you. There's a lot of legacy around that operates on a local or company basis.

Q: How does the shift in the business model and the IT governance model affect the CIO role?

A: We are strengthening the group CIO function. To be effective globally, you need key standards and services. To make that approach stick, you need a stronger CIO role.

—Paul Tate



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FRANCE

Dotcom Naming Race

If your company hopes to extend its online brand to France, you'd best hurry; when it comes to registering domain names, the rule there is first come, first served.

Online auction company eBay was too slow off the mark. When it launched its French website in October, it found the name eBay.fr had been registered a year earlier by local telecommunication service provider Forum on the Net.

AFNIC, the registry for domain names ending in .fr, insists that registrants show they are legally entitled to their chosen domain name, which must be represented on the company's "Kbis," a kind of

identity card for businesses.

So far, eBay has failed to take control of its domain name through the courts. An initial ruling favored Forum on the Net.

"The law was never designed to handle cross-border issues like this," says Alexander Drobik, vice president of the business management group at Gartner Group. His advice? If you're thinking of extending your brand to France, call your lawyer—quickly. —Peter Sayer

ASIA

C2C Gets Legs

Businesses operating in Asia are being promised cheaper high-bandwidth connections from city-to-city (C2C), a \$2 billion fiber-optic cable network scheduled to begin opera-

tion in the third quarter.

Telecom costs for end users within Asia are higher than to the United States from Asia because of Asia's lack of infrastructure competition, according to Bertrand Bidaud, an analyst at Gartner Group in Singapore.

"With greater capacity and greater competition, there will

C2C's first year. Price competition will accelerate when other new cables, including East Asia Crossing and perhaps the proposed PCCW-Telstra, come onstream after mid-2002.

Almost a year from completion, C2C has already secured capacity purchases representing slightly less than 40 percent of the network's total capacity, company officials claim.

—David Legard

GERMANY

Siemens Building Exchange

German electronics and engineering giant Siemens is launching a billion-euro (US\$868 million), three-year program to transform itself into an electronically driven company, using an intranet to put everything from financial management to manufacturing to marketing online. The company's 447,000 employees in more than 190 countries will have Internet access by October.

Also on tap are supply chain

WORLDWIRE

Do not begin eating in GERMANY until your host has said, "GUTEN APPETIT."

be a sharp drop in the cost of telecommunications within Asia," he says. "There will be dramatic change during the next three years." Bidaud predicts bandwidth prices in Asia will drop at least 30 percent in

management, online procurement and electronic sales systems, says Siemens spokesman Constantin Birnstiel.

The company has contracted with i2 Technologies, Commerce One and IBM to

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build its business infrastructure. Siemens expects to process half of its procurement volume electronically in the next three years. The new platform, Click2procure, will be semi-open, meaning that suppliers, but not competitors, will be invited to join each other and Siemens for volume discounts.

Jaap Favier, senior analyst at Forrester Research in Amster-

services does not exist in India, and even the most optimistic analysts don't expect a commercial-grade grid to be available until the middle of 2002. Until then, potential ASP customers will have to do their own thing.

Bharath Venkatesh, system administrator at Bangalore-based, electronics components maker C-MAC Centum Electronics, a majority-owned joint

However, unable to get a good ASP service, C-MAC Centum recently purchased the hardware and software it needed to set up its IT infrastructure in-house.

—John Ribeiro

| TAIWAN | More Pipes Mean Lower Costs

Business users are expected to be the big winners when Taiwan's three new private fixed-line telecommunications operators open for business this year and start competing with incumbent Chunghwa Telecom. Each newcomer is backed by major local and international communications players.

As one of the last major steps toward full telecom liberalization, the government is

preparing to award licenses for additional submarine cables that will provide international links for the new fixed-line network operators.

The directorate general of telecommunications expects the liberalization of the fixed-line and undersea cable businesses to cut international call charges in half in three years.

The new fixed-line operators will target the lucrative business market, which the incumbent apparently is underserving. "Chunghwa needs to become more responsive to the needs of business users if it wants to keep its corporate customer base intact," says Thomas Hutchison, telecommunications analyst at the Taipei branch of Nomura Securities.

—Terho Uimone

WORLDWIRE

Wearing only WHITE or BLACK in India indicates that you're in MOURNING.

dam, says supply chain automation can yield up to a 10 percent cost reduction for a company. That could save Siemens as much as \$6.5 billion based on last year's net sales of 78 billion euros (US\$65 billion). Birnstiel projects a modest 3 percent to 5 percent savings during the project's life cycle. Siemens CEO Heinrich von Pierer says the company had online sales of about 5 billion euros from e-commerce in 1999, and he expects "that will grow quickly."

—Rick Perera

| INDIA | ASP Downtime

Multinational companies in India may have to wait until 2002 to find suitable application service providers to run in-house IT infrastructure.

The infrastructure for ASP

venture of C-MAC Industries of Montreal, says the ASP model would have considerably reduced the costs of hardware and software licensing fees.



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JAMES M. SPITZE | WORLDVIEW

Inside a Global Systems Failure

Learn how a lack of global leadership destroyed 50 percent of a multinational company's market capitalization

THIS IS A STORY ABOUT A FINANCIAL and management disaster, something far more than a simple IT-based missed opportunity. Since many of the people involved are personal friends, their identities must be concealed.

A major U.S.-based company failed to implement a global information technology strategy. The failure cost the company's investors 50 percent of their stock

price, a market capitalization decline of approximately half a billion dollars—at a time when most established companies were showing strong gains on Wall Street.

The company, a market leader in the industrial services business, has offices in virtually all of the world's developed countries and representatives in most of the rest. Management's failure to exert leadership over regional executives and their

technology choices formed the core of a \$14 million cost overrun and the delays that led to the savaged stock price.

The sad story begins in late 1996. The company had deeply troubling IT issues that were negatively affecting its bottom line. Customer queries about the status of their orders sometimes took days to answer, in contrast to the few minutes' response time offered by some competitors. If a customer wanted multiple services in multiple countries, the status tracking of all those services was done on a number of largely separate systems. Customers from some very large companies had demanded (and obtained) special consolidated tracking information, but this was mostly manually prepared, and similar information was simply not available to the great majority of the company's customers. Additionally, pricing was incredibly complex. Often a tailored service that was thought to be quite profitable proved to be far less so than expected.

The company asked my company, Systems Consulting Consortium, to develop an "at once" corrective action plan, which we delivered in two to three weeks. After that was implemented, we were asked to develop a realistic three-year IT plan that would reestablish the company as the technology leader it had once been.

In April 1997, we completed the plan to construct an up-to-date, globally accessible information system. The new system was to have replaced the set of elderly, poorly integrated legacy systems that were causing the company's ongoing problems. The predicted capitalized expenditure was around \$36 million.

The plan was developed for the chairman with the active involvement of the company's president, CFO, CIO, three vice presidents of sales and various relevant personnel from its overseas offices in Australia, Central and South America,

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Europe, the Far East, the Near East and New Zealand. The chairman approved the plan and authorized the CIO to move forward. But some key Asian, European and U.S. personnel adopted a wait-and-see stance. This was a sign of trouble to come.

Fast-Forward to Today

As of late 1999, around \$50 million had been spent to complete what had been conservatively estimated in early 1997 as a \$36 million effort. Somewhat more than half of the planned service tracking and accessibility functionality was up and running—and some of that was being questioned with regard to whether the tech-

what seemed to be miraculous time. However, the somewhat strange development environment foreshadowed the start of a downhill slide. The work on the production applications in the United States using the imported programmers started to take far more time than expected. As it turned out, the original prototype based on the European tool proved to have limited functionality and was almost impossible to scale to the volumes expected in an international environment.

As time dragged on, a package solution began to look more and more viable, at least for some of the required functionality. The product of a small British organi-

the relatively modest suite of headquarters administrative systems took almost three years and cost almost a third of the previously mentioned \$50 million, roughly three times what it should have cost.

Second, the CIO lost control of the global architecture. A well-defined, technologically “clean” project became unnecessarily complex—at great cost.

Why did the CIO lose control? The CIO and the chairman did not have a deep, meaningful level of mutual trust and respect. This led to adopting a “European tool” and the package from the small British company.

Top executives at global companies should avoid accepting someone’s pet toy when it comes to global deployment of a mission-critical system. The desire to achieve global harmony by accepting overseas solutions should be tempered

by prudent, nonpolitical evaluations. The risk of using obscure tools is well-known in a domestic setting. It is even greater in a global setting.

At press time, the company is rebuilding its mission-critical system, using some of the viable modules from the current structure. If it succeeds, it can reestablish itself as a global market leader.

The missing elements in all of this were balance and focus—assessing choices with cautious detachment and intently watching the ball. Searching for silver bullets led management astray. The company, its employees, its customers and its stockholders are paying a high price. **CIO**

James M. Spitze is cofounder and managing partner of the Systems Consulting Consortium (www.scc.cc), an IT-focused management consultancy in California. He has spent half of his 40-year career as a senior IT executive and CIO for companies with, in most cases, overseas operations.

“The CIO lost control of the global architecture.”



nology was up to date. Currently, market share is continuing to decline, and the bottom line remains unacceptable.

I alluded earlier to the problem that from the start, the plan had only partial buy-in from some key company executives. A continental European executive pushed for a development language that “his people” had used in Belgium; it was a tool almost unknown in the United States. He stated it would be “faster, cheaper and better”—the proverbial silver bullet. One executive in the Southern Hemisphere thought a warehouse management system that had been developed in his area would be “just great” as a global solution.

The European development tool was selected—although our original plan recommended the use of Visual Basic. Since there were no programmers familiar with the European tool in the United States, a team was imported from Europe. The team produced a prototype system in

zation was selected. One of the U.S. company’s brightest and most articulate programmer-analysts became an “internal salesman” for the British package. But his concern about the overall project’s problems was ignored for several precious months, and he resigned—a significant loss.

Debriefing

While hindsight is always 20/20, the failure of the organization to deliver a system suitable for a global organization was not a surprise. This was a management failure, not a technology failure.

First, executive management failed to back the CIO when he advised against both the unknown development tool and the package from a small company. Various local and regional executives pushed for and “sold” their personal silver bullets. When they couldn’t get their way, they dragged their feet. For example, the “should have been simple” replacement of

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GOOD MORNING



Once again, today has arrived. And it brings with it the same meetings, the same problems, and, in many cases, the same solutions. Unfortunately, many of those same solutions aren't working. Because business has been transformed by the little letter e. And the technology that was once the domain of twentysomethings with a website and a warehouse in their garage is now an integral part of every business. Fortunately, however, the same principles that made for good management before still make good eBusiness sense. Of course, that's a lot more difficult now that your business isn't contained by four walls and needs to be accessible anywhere, anytime, for anyone. That's why it's more important than ever to have the very best software. Software that manages your business processes—integrating all parts of your company, including suppliers and partners, to make sure that they're working together seamlessly. Software that manages information—storing, accessing, and utilizing the vast wealth of knowledge that you continually gather about yourself and your customers. Software that manages your infrastructure—maintaining and securing your assets while letting you see the big picture to ensure that everything keeps running smoothly. There's no doubt about it. Things have changed. But that just means there will be new solutions to the old problems. And we think that's a change for the better.

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The 2001 Enterprise Value Awards were tough to judge and even tougher to win BY ELANA VARON

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WINNER | HARRAH'S ENTERTAINMENT

Jackpot!

Harrah's won its bet that IT would bring customers to its casinos.

By Meredith Levinson



WINNER | OFFICE DEPOT

Clicklayer

Office Depot built online success on a brick-and-mortar foundation.

By Eric Berkman



WINNER | TUFTS UNIVERSITY

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to draw strength from within and to push ourselves, as hard as we can, forward. We become better because we imagine we can be. And we become leaders—visionaries, even—when our peers adopt our expectations as their own. ■ For nine years, CIO has honored information technology visionaries with

RETROSPECTIVE

Whatever Happened to...?

Past Enterprise Value Awards winners aren't resting on their laurels. We look at recent honorees that continue to create enterprise value.

By Tom Field



HONORABLE MENTIONS

On the Rise

General Motors and ESAB Welding and Cutting are setting the stage for future gains.

By Stewart Deck



THE PROCESS

Getting Tough

This year, five independent judges, all CIOs, held their peers to higher standards.

By Elana Varon



the Enterprise Value Awards, and each year the winners surpass the standard for excellence set by their predecessors. "The bar is going up," notes Doug Barker, CIO and vice president with The Nature Conservancy and one of five independent judges who selected this year's awardees. "As technology has evolved, it's more powerful than ever in terms of what it can accomplish for an organization." Award winners are those companies that harness that power to coax ever more value from their technology investments.

This year's honorees extended the benefits of information technology beyond the boundaries of a single department or production process—beyond, even, their corporate walls. Companies know they must adapt to an economy in which survival depends on more than distributing products and services in a cost-effective way. The victors in a networked world will be those organizations that derive additional value from interactions with employees, customers and suppliers.

While many organizations struggled to identify how IT can deliver these new opportunities, the 2001 Enterprise Value Awards winners—Tufts University, Office Depot and Harrah's Entertainment—conceived a vision of the future and pursued it. "They clearly changed their businesses in a broad, sweeping way," says judge Patricia Wallington, former CIO of Xerox and now a consultant.

Which should come first—identifying where there is value to be tapped or understanding how IT can extract it—is a bit like the chicken-and-egg question. It's safe to say that all of the honorees were spurred to develop their winning systems based on a deep understanding of their businesses and the relationships that were critical to their success. They imagined how IT could help them make those relationships more valuable. This award honors that imagination.

Leaders and Winners

In each case, the winners placed technology at the center of their business strategy. In past years, "we would look at a single division project or an internally focused project and that would be a candidate," says judge Peter Solvik, CIO and senior vice president of Cisco Systems. Now, a winning system "has to provide enterprise-level competitive advantage and strategic differentiation."

For Tufts University that meant thinking differently about what makes an educational institution great. Home to one of the nation's top-ranked medical schools, Tufts faces intense competition for students from rivals like Harvard and Dartmouth. Usually, universities

maintain their cachet by hiring star faculty or building state-of-the-art laboratories. But what counts in the end is how well they teach their students. Tufts decided it could make its mark by using technology to change how its students and faculty interact.

The university built a multimedia knowledge management system for course materials, including texts, laboratory slides and recordings of professors' lectures, that students can access over the Web. The system, called the Health Sciences Database, helps students learn better by linking information across courses and providing

A winning system has to provide enterprise-level competitive advantage and strategic differentiation.

ways for them to assess their knowledge daily. Faculty can share materials, thus saving time and money, while online feedback from students helps them use class time to focus on topics those students want to discuss most.

Not all of these benefits were obvious to Tufts at the start of the project. Elizabeth Eaton, director of Tufts' health sciences library, initially intended to build a simple image database, something faculty members had requested for storing copies of their slide collections so that students wouldn't have to use often irreplaceable originals. Some pointed questions from Tufts administrators about what would make students want to use the database led Eaton and her team to create a must-visit destination, with access to other online teaching tools. No focus groups told them this was what the increasingly wired student body wanted, but they assumed students expected no less.

"They had an open-minded way of thinking about what their objectives were," says Wallington. That flexibility freed Tufts' students and faculty to find new uses for the system, from posting changes in class schedules to filling out course evaluations. Tufts' dental and veterinary schools adapted it for their own curricula.

The idea that Tufts should integrate its medical programs had germinated for years. The late Jean Mayer, a nutritionist who was president of Tufts from 1976 to 1992, had called for a unified health sciences curriculum. "His whole dream was to have all the faculty share in the education of all our students. We had that [concept] of 'one medicine' as our model," Eaton says.

"The benefits were huge and so visible that it changed the way

WHO

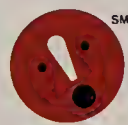
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education is being delivered in this institution, in a way that benefited every stakeholder," Wallington adds. The value of the system is now accruing beyond the university. The American Association of Medical Colleges, the accreditation body for U.S. medical schools, is studying the project as a model for teaching health-care professionals at universities around the country.

When Office Depot launched its online business in 1997, every retailer was scrambling to figure out what the Internet would mean to them. Some still are. What distinguishes the office supplies vendor is how it approached the challenge. Rather than ask how the company could do business on the Web, executives asked how the Web could help them do business.

Framing the question this way led Office Depot to consider the value of the Web not merely to its internal operations, but also to its customers and suppliers. The company figured that customers wanted the same things—like ways to check for in-stock items or to find out when their orders would be delivered—whether they shopped online or in a store. Suppliers provided the same products in each sales channel, executives reasoned, so they should be able to deliver item descriptions and monitor inventory through a single interface. Offering such online services to everyone would make Office Depot a more valuable business partner.

So Office Depot integrated its Web, telephone, fax and brick-and-mortar sales channels through its back-office systems. The same

in the past," he says, and concluded those companies achieved only short-term benefits.

Award judges were impressed by the returns Office Depot has achieved from this bricks-and-clicks strategy, including lucrative new contracts from Fortune 500 companies, brisker sales and the ability to tap overseas markets. Judge Gregor Bailar, CIO and senior vice president of the National Association of Securities Dealers, says the company "is fundamentally changing the way its bricks are working."

Harrah's too understood that it could use IT to make its services more valuable to customers and, in turn, benefit the company. While other casinos were investing millions—even billions—of dollars in splashy attractions, Harrah's studied what really motivated people to visit its casinos. The result of this research was a customer relationship management system called Total Rewards, which offers incentives such as free hotel rooms to frequent casino visitors so that they'll return even more often.

Deploying Total Rewards meant that the company had to change its attitude toward its customers and treat them differently than its competitors did. Like other gaming companies, Harrah's viewed its customers as "belonging" to the one casino they visited most often, generally the casino closest to where they live. But when Harrah's started to treat them as customers of the entire company, it increased the number of customers who visited different casinos. The company has nearly doubled its revenues from cross-marketing.

Harrah's invented a new value proposition for itself, notes Barker, and doing so required that key executives and the IS staff "have a long-term, mutual understanding of their strengths." It also required that they stick to their vision through the four years it took to develop Total Rewards. IT vendors told John Boushy, Harrah's senior vice president of brand operations and information technology, that what he wanted to do was impossible. The company's rank and

file, meanwhile, doubted the project was worth the effort.

Boushy says the company persisted because CEO Phil Satre believed in the research he had done, which showed that customers patronized different Harrah's hotels around the United States, and he was convinced that the company would benefit from encouraging its customers to visit multiple properties.

In the end, Harrah's imagination and doggedness propelled it to the top of its industry, based on same-store sales growth and the number of individuals who carry Harrah's player cards as opposed to those of its competitors.

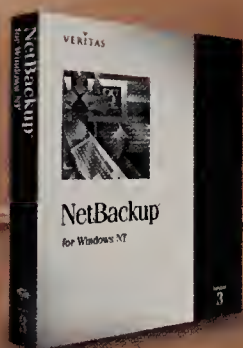
Office Depot's integrated approach contradicted conventional wisdom, which favored separate online units with spinoff potential.

accounting, billing, ordering and inventory systems, fed by a central data warehouse, support each channel. Views of this information are delivered through a corporate intranet, vendor extranet and the company's online store, OfficeDepot.com. While a similar approach is now being adopted by other retailers, it contradicted the conventional wisdom of the time, which favored separate online business units that had spinoff potential.

"We thought the spinout model was going to be temporary," says Office Depot CIO and Executive Vice President Bill Seltzer. "We looked at other companies—not dotcoms—that had done spinouts



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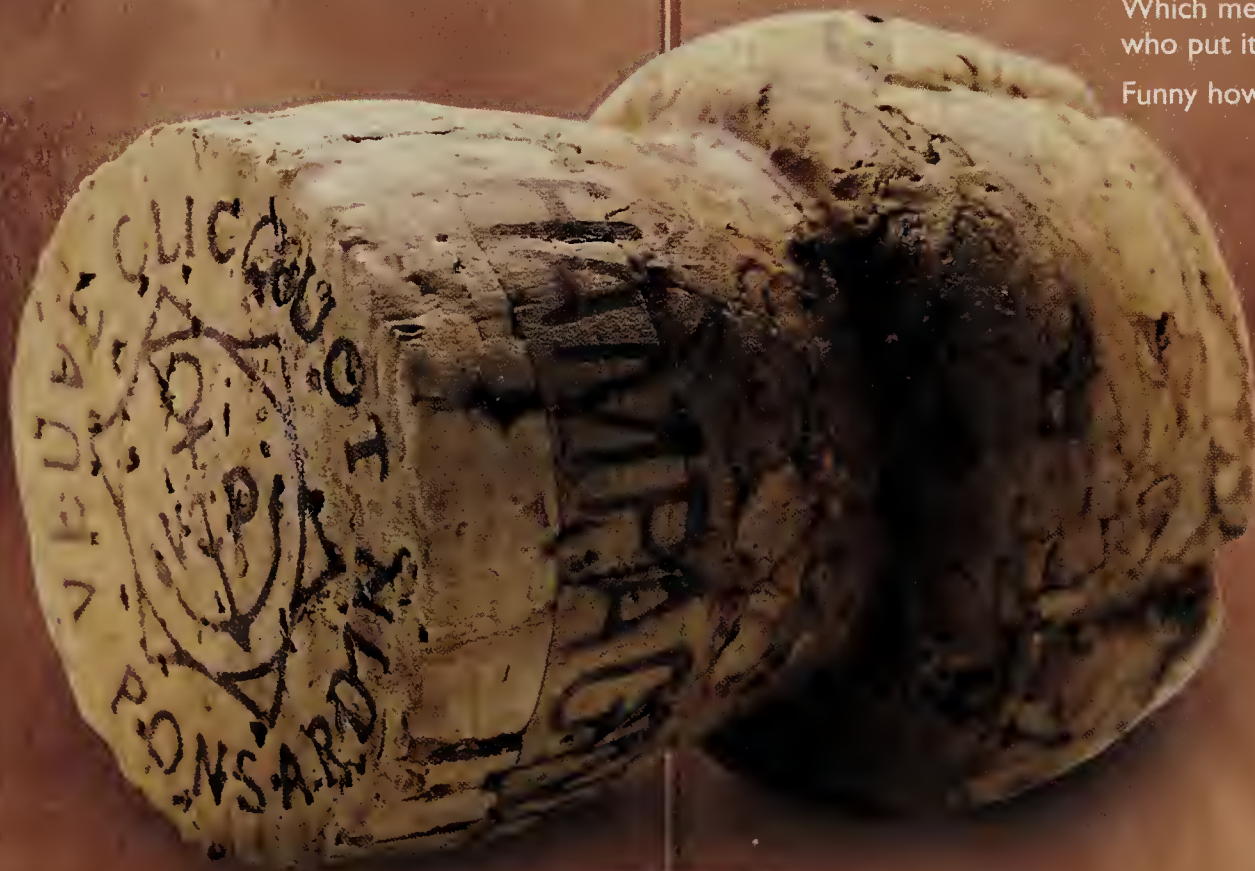


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The Evolution of Value

One challenge judges face year after year is assessing whether the systems have generated true enterprise value. Early on, judges demanded that applicants show clear financial returns on their investments. But as IT has become part of the fabric of an organization, not all of its benefits can be measured in monetary terms. Financial returns are appropriate for some types of projects, but “projects that have to prove a simple financial ROI aren’t as strategic and core to a company’s business,” says Solvik. The judging process has evolved to accommodate that change.

“One of the things we’ve learned over time is that the definition of value is very multifaceted,” says judge John Glaser, CIO and vice president with Partners HealthCare System, which won an Enterprise Value Award five years ago. “There can be market share measures or service gain measures.” Harrah’s, for example, measures repeat visits by customers as well as the revenue it has accrued from cross-selling. Tufts notes the speed with which faculty can respond to online course evaluations. Office Depot counts the convenience and savings its website offers customers in addition to how much more they spend on average.

There is value that’s even harder to measure but is, says Wallington, “intuitively obvious.” How, for example, to quantify the value of a learning tool? What is it worth to be able to concentrate on images of a healthy heart and a diseased one in your living room, rather than in a crowded library with a line of peers behind you clamoring for a couple of sets of slides?

Here’s where leadership and experience count. For example, Office Depot’s executives understand their business well enough to know how crucial the Web is to their operations. “They don’t need to explicitly cost it all out to know something makes good sense,” says Barker. “It does not mean a lack of accountability or an open checkbook. They don’t need to be explicit because they’re paying attention to the right business measurements.” Those measurements may be different for every company, he adds, but they demonstrate that IT has enabled each organization to grow and move forward.

Learning from Experience

Sometimes, a project can provide value to an enterprise even without transforming a company. Such was the case, the judges decided, with automaker General Motors and ESAB Welding and Cutting, which produces manufacturing equipment. Both tackled the

challenge presented by electronic commerce and demonstrated the potential for huge gains, though their current returns are modest. They are recognized with honorable mentions this year.

Both companies represent traditional industries that, despite the e-commerce boom, still do business much as they always have. Like every car manufacturer, GM sells its cars through a network of dealers even as the online marketplace for car shopping is expanding rapidly. ESAB conducts the majority of transactions with its mostly unwired customers by phone, paper and pencil.

Yet both companies explored ways that they could turn the Internet to their advantage. GM set up a website, GMBuyPower.com, through which it could funnel sales leads to its dealers. ESAB became the first welding equipment manufacturer to build an e-commerce infrastructure and taught its distributors how to use it.

In each case, says Glaser, it’s too soon to say what the long-term value of these two systems will be to their respective companies.

As IT has become part of the fabric of an organization, not all of its benefits can be measured in monetary terms.

“There are all different kinds of values,” he says. “They didn’t bet the farm because it’s not clear that would be the right thing to do. [But] in both cases, they were well-conceived experiments to understand what the role of the Internet is.” The value of these projects lies in what the companies learn from them—a return that won’t necessarily show up on any balance sheet.

It is a company’s willingness to take risks, to imagine a different future, that determines whether it has any chance of reaching the winner’s circle. This year’s winners imagined themselves differently—and better—than they were and have reaped the rewards.

“The real winners are going to be those companies that have a far-reaching view of their business and the fortitude to implement it,” concludes Wallington. Then they’ll have to start all over again. “I don’t think that just because you reinvented your business today that you’re done.”

Technology doesn’t simply support such transformations. It is making them possible. **CIO**

Senior Editor Elana Varon wants to know how IT is transforming your company. E-mail her at evaron@cio.com.

One day you wake up and realize that your e-commerce site is, well, all your commerce.

Have you heard of Kintana?

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Ninety percent of Cisco orders are processed through a critical e-commerce application called Cisco Connection Online. It brings together over 400 content developers, 700,000 data files, and 175 applications to generate \$55 million in revenue every day. Needless to say, as CCO goes, so goes Cisco.

Cisco asked Kintana for help in technology chain automation for this e-commerce side of their business. By providing secure, systemized processes with increased visibility, self-service reviews and approvals, and automated deployment of new site features, we have delivered in spades. Revenues through CCO have quadrupled from \$4 billion to \$17 billion a year, while the team required to manage the site has decreased by 25%.

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*Mark Tonnesen, Vice President Information Technology
Cisco Systems*



Windows 95

A fatal exception 0E has occurred at 0028:C0011E36 in UXD UM
00010E36. The current application will be terminated.

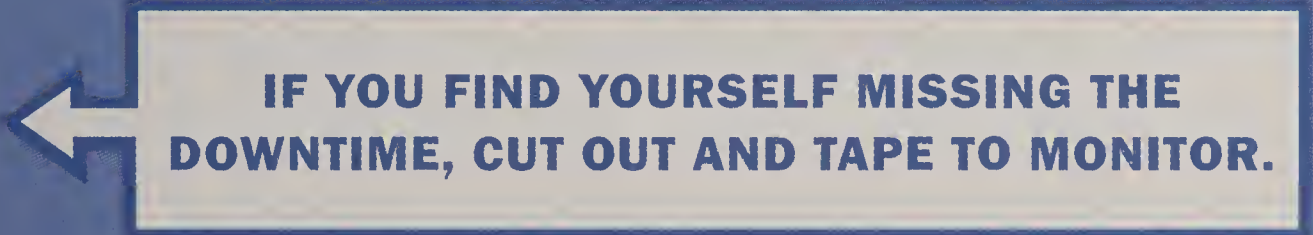
- * Press any key to terminate the current application.
- * Press CTRL+ALT+DEL again to restart your computer. You will lose any unsaved information in all applications.

Press any key to continue _

GOODBYE BLUE SCREEN, HELLO RELIABLE MICROSOFT

In the 24/7 digital economy, your users don't have time to be staring at "blue screens." NSTL test results show that Windows 2000 Professional is 13 times more reliable than Windows 98*. Which means users will need far less support. But that's just the beginning of the news on Windows 2000 Professional. You'll also find enhanced deployment capabilities (including remote installation and unattended installs) which give you full control of large-scale system installations to save you time and resources. And your control of users' desktops is broader than ever, from flexible access to total lock-down.





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ENTERPRISE VALUE AWARDS HARRAH'S ENTERTAINMENT

HEADQUARTERS

Las Vegas

CORE BUSINESS

Gambling, entertainment

FINANCIALS

1999 revenues:

\$3 billion

EMPLOYEES

36,100

URL

www.harrahs.com

Jackpot!

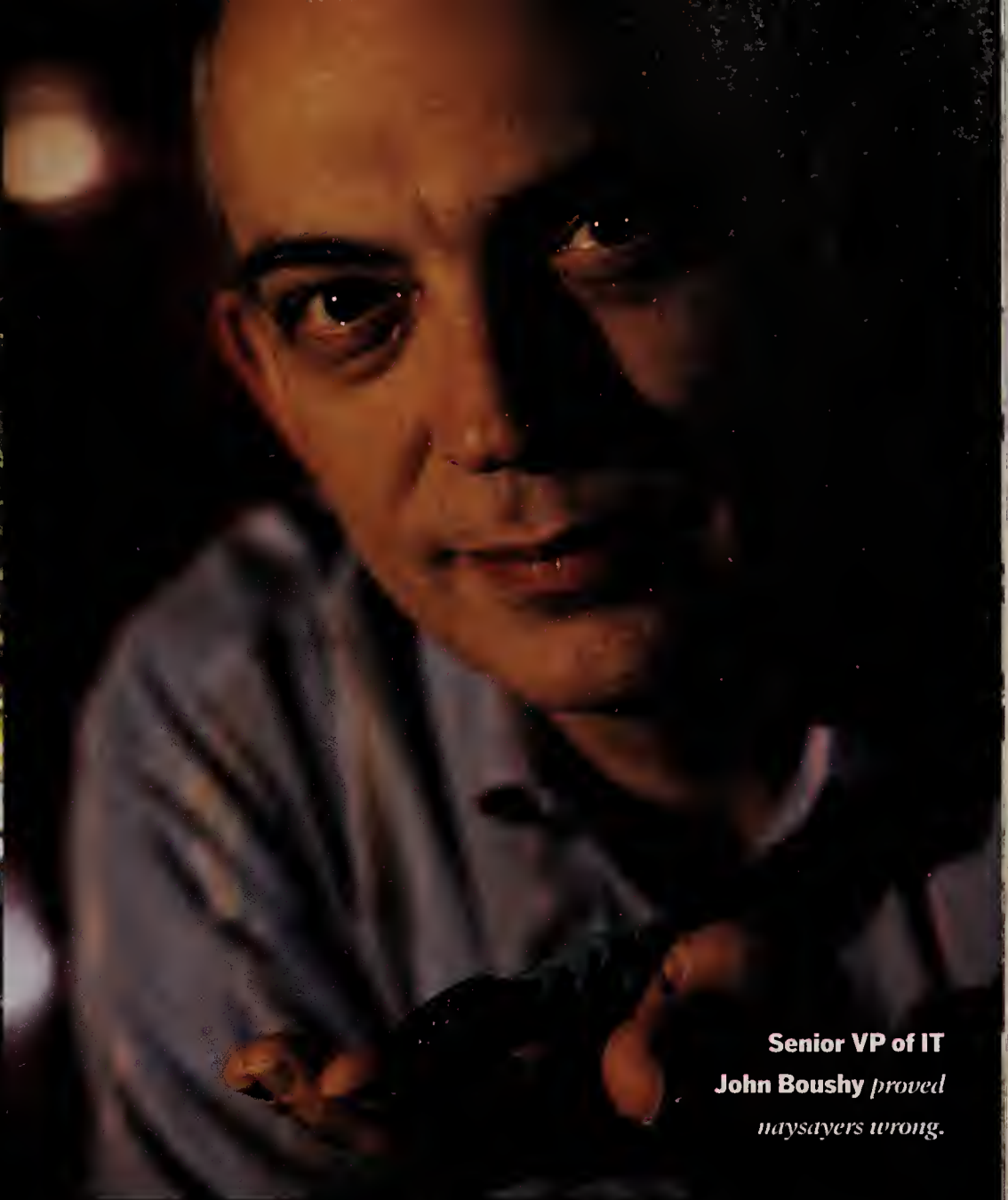
Harrah's big payoff came from using IT to manage customer information

Las Vegas is all about illusion. You put your money down, and the Strip promises a trip to a fantasyland that replaces reality with dazzle. That's just as true for the business side of things, and Harrah's Entertainment is the best example. ■ Consider the following. Every 15 minutes tourists mob the bubbling volcano outside of MGM's \$750 million Mirage hotel, and after, a few of them might even go into its casino to spend a

WHY HARRAH'S HAD

A WINNING HAND Harrah's broke the mold of a conservative industry when it decided to invest in technology instead of more fantasy and glitz. Its bet has paid off big time, with a groundbreaking, coast-to-coast network and integrated customer database that has helped it boost revenue growth by multiples more than that of its flashier competitors.

BY MERIDITH LEVINSON ■ PHOTOGRAPHY BY MARK ROBERT HALPER



Senior VP of IT
John Boushy *proved*
naysayers wrong.





COO Gary Loveman *bet against industry wisdom.*

couple of hours and a few thousand dollars. In comparison, on the other side of the street, the diminutive Harrah's hotel and casino looks lost and forlorn.

The reality? In 1999, Harrah's posted revenues from its nationwide business of \$3 billion against just \$1.6 billion two years earlier, and same-store sales grew 14 percent above the \$242 million of 1998—two to three times the growth of its competitors.

The difference is that most companies put money into the spectacle. Of the newest hotels on the Strip, Las Vegas Sands's Venetian Hotel cost \$3 billion to build and MGM's Bellagio came in at \$1.8 billion. Harrah's, on the other hand, chose to put most of its money into the winner's information network (WINet), the industry's first national customer database.

Now Harrah's can boast of having the only integrated, coast-to-coast system that allows real-time communication between all of its properties; it can inform a site in Nevada exactly how a visitor from New Jersey likes to gamble, eat and spend. It's the key to Harrah's Total Rewards program, a groundbreaking CRM strategy. "They changed their relationship with their customers, set themselves apart in their industry and created enterprise value," says Gregor Bailar, CIO and senior vice president of the National Association of Securities Dealers, and a 2001 Enterprise Value Awards judge.

Bigger Risks Bring Greater Rewards

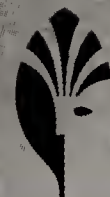
It has been a complete break with tradition. The prevailing wisdom in the industry is that it's the property's attractiveness that drives customers to one site or another, says Gary Loveman, Harrah's COO—a view that has propelled the spending of ever-greater amounts on evermore lavish hotels and casinos to keep customers coming through their revolving glass doors and parked at their slot machines.

"That [belief] drove the \$2 billion investment at the Bellagio," Loveman says. "Our approach is different. We stimulate demand by knowing our customers."



HARRAH'S IT BUDGET IS **20 percent higher** THAN ANY OF ITS COMPETITORS.

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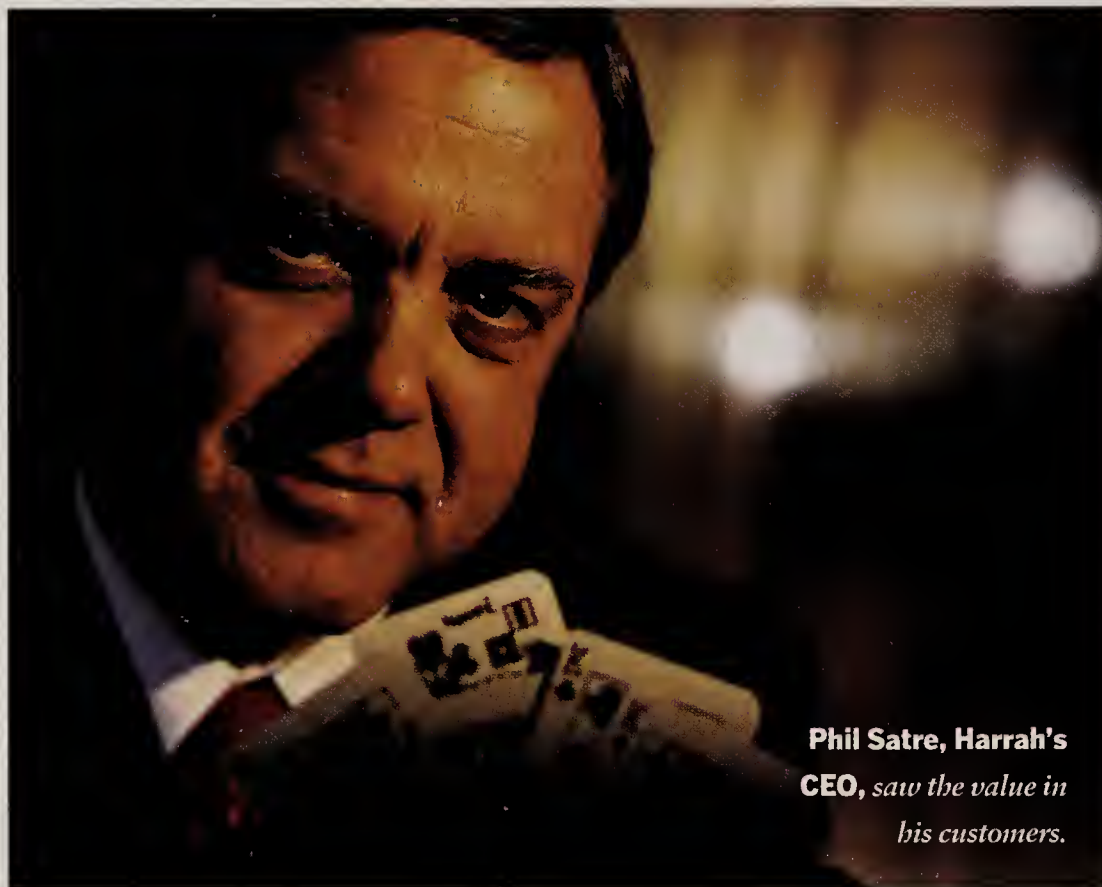
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Phil Satre, Harrah's CEO, *saw the value in his customers.*

What's in the Cards

COST: \$30 million for development and around \$35 million for support

HARDWARE: AS400 mainframe transaction systems, Unix systems that hold the Patron Database (a national customer database), and an NCR data warehouse

SOFTWARE: Data warehousing software, Cognos Impromptu Query tool, predictive modeling software from SAS Institute, data analysis tools developed in-house. BEA Top End message manager middleware for managing transactions between the Unix and AS400 systems.

NETWORK: The whole is linked over a WAN.

Before the development of WINet, Harrah's was just like any other casino company. It operated under the assumption that its customers were partial to one particular casino, and its casinos around the country each operated independently and competed with one another. Each had its own player card that was valid only at the casino that issued it, and none of the information systems at these individual sites were integrated with those at other casinos or could even communicate with them.

Harrah's CEO Phil Satre recognized back in 1988 that this might not be the way to go in the future. By doing market research and conducting a few satisfaction surveys, he found that customers did indeed patronize different Harrah's sites around the country, rather than just staying loyal to one. That led him and John Boushy, Harrah's senior vice president of brand operations and information technology, to muse on the possibility of extending its card player program so that customers could use their cards at any Harrah's casino.

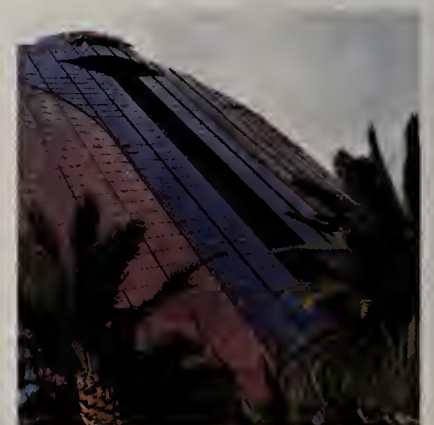
They realized that would allow the company to track particular customers—and, more important, the way they used Harrah's facilities—on a national basis. Knowing when a customer last visited Harrah's, for example, and which property and restaurant was visited, what games were played and how much was spent would enable the company to improve its service, customize the kinds of comps (free dinners, show tickets and hotel rooms) it offered, and

better tailor its marketing promotions. All of that would help tie customers closer to the Harrah's brand and increase the company's share of the U.S. gaming market.

It was, in retrospect, a brilliant idea, but more pressing matters intervened at the time to push it onto the back burner. Gambling on riverboats and Indian reservations was legalized in the early 1990s, and the business entered a period of rapid expansion. What historically had been a business concentrated in Nevada and New Jersey's Atlantic City began to flourish all over the country. Harrah's moved to take advantage, tripling its casinos to 12 by 1997.

Committing to build a single nationwide database back then, which would have involved standardizing all of the company's disparate IT systems, was too enormous a project at a time when the technology for doing it wasn't mature, and while the company was preoccupied with building new properties, Satre says.

By the mid-1990s, however, expansion started to slow down and Harrah's growth stagnated. While his competitors continued to pour money into evermore extravagant casinos to drum up new busi-





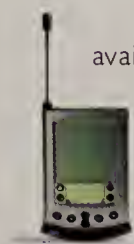
MANAGEMENT CRISIS

Roberta hears about
client crisis on way to
meeting in Tucson.
She goes back to office.
She misses her flight.
She misses her meeting.

CRISIS MANAGEMENT

Roberta hears about
client crisis on way to
meeting in Tucson.
She wirelessly accesses
crucial information from
company intranet.
Then she rallies her team
via e-mail.
She makes her flight.
Problem is solved by takeoff.

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data
service



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HARRAH'S IS THE ONLY **company** IN THE ENTERTAINMENT INDUSTRY WITH A **player card** THAT IS ACCEPTED AT ALL OF ITS **casinos**.

ness, Satre once again picked up on the idea of a national approach to Harrah's business.

"We decided that we needed to be able to create marketing programs that would allow us to compete without continuing to pour additional capital into our properties," he says. "We realized our core competency was in

the relationships we create with our customers, and we wanted to expand that competency using automated tools."

But first, Harrah's had to find a way to consolidate all of those far-flung and isolated IT systems, so that all of the company's properties could communicate with each other and share information about customers.

Betting Against the House

It was no simple task. Boushy first began conceptualizing WINet's functionality and architecture in 1993, and he and his team began building it in 1994. But the success of the project hinged on a redesign of the company's IT infrastructure, which seemed at first an impossible demand. They had to make Harrah's AS400 transactional systems that supported customer activity in the hotel, casino and event reservations areas at each property communicate with a Unix-based national customer database, called the Patron Database, which would be developed and would contain all of the company's customer information.

IBM and AT&T, Harrah's hardware vendors, told Boushy he would never be able to do that because the mainframes were incompatible with the Unix systems. Boushy and his team eventually proved them wrong by using middleware and software developed in-house, though that didn't always seem to be the biggest obstacle.

"There were times during this proj-

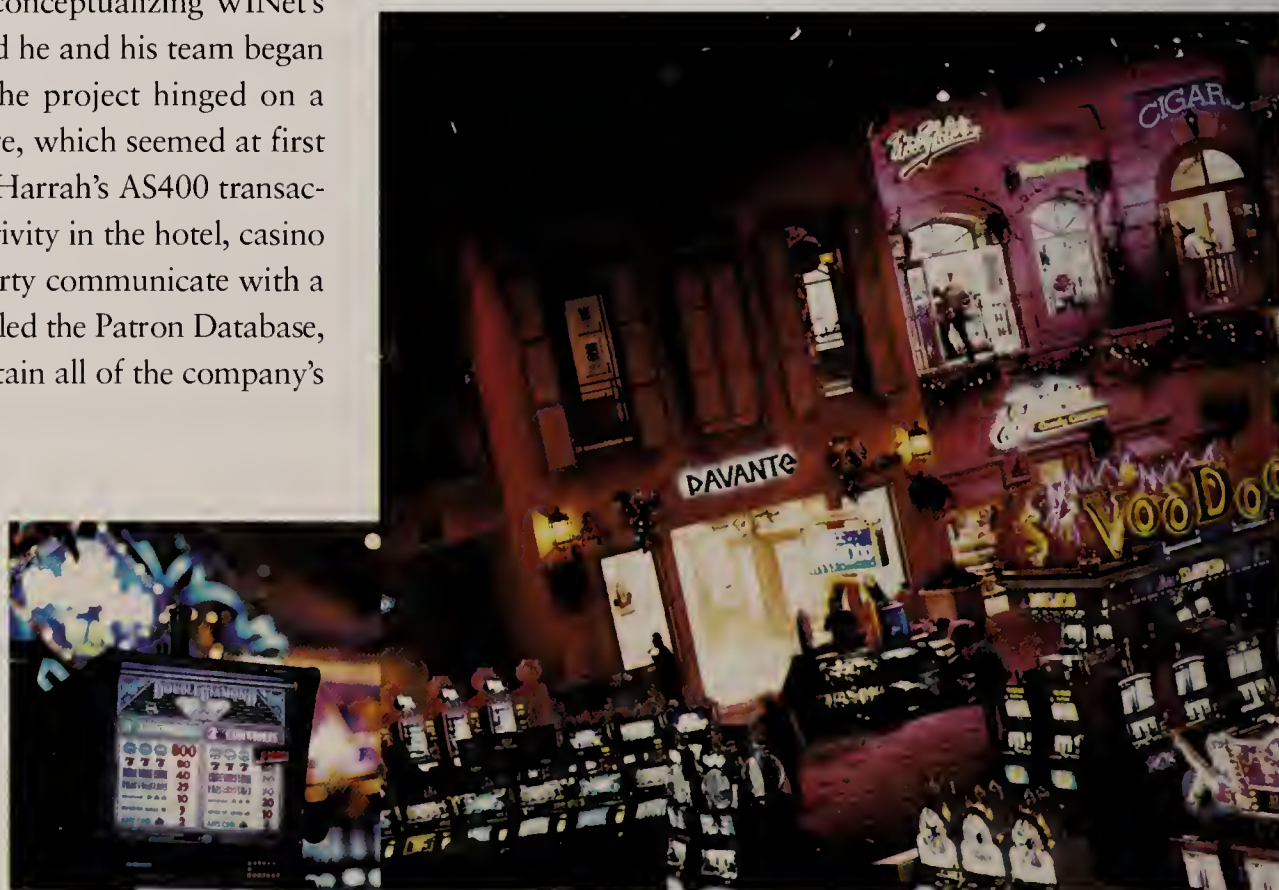
ect when the single greatest challenge we faced was convincing the IT people we could do this," Boushy says.

He came up with some creative ways to try to motivate his team. In mid-1996, technical difficulties, a lack of enterprisewide standards and an underestimation of the whole project's scope had thrown it off track. So Boushy committed to letting his then short hair grow until WINet was up and running, as a way to show confidence in the team. A month later, a software bug decimated the entire database, which Boushy and his team had to rebuild from scratch.

Boushy's hair was a Samsonlike shoulder length by the time the Patron Database portion of WINet was running in February 1997.

But the pain was worth it. Once WINet was up, Harrah's could finally share information across its properties, in real-time, for the first time in its history. If a customer who had just been gambling in Joliet, Ill., hopped a plane to try his luck at the Harrah's casino in Reno, the employees there would know exactly what the customer did in Joliet and what services to provide.

The company's 35,000 slot machines now also connect to the AS400 systems, and call-center reps are linked to both the AS400's and the Unix Patron Database. The AS400s communicate with the Patron Database through a Unix gateway. Analysts in the marketing department use Cognos' Impromptu query tool to access the data warehouse and use SAS software to do predictive modeling.



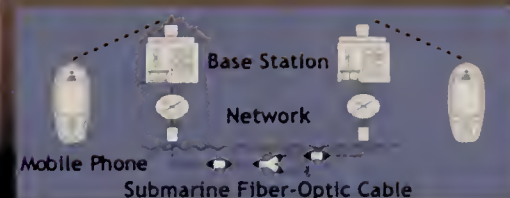
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Mobile communications network.



Trium concept model. Picture simulated.

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That real-time access is key to enabling Harrah's Total Rewards program. A customer who receives a promotion in the mail will call Harrah's to inquire about it, and as soon as the customer service agent gets on the phone, a slew of information identifying the customer pops up on the agent's computer screen. It indicates the tier (platinum, gold or diamond) the customer falls into, where he usually plays, how much he's won or lost, and even what he might be worth.

The agent then asks the customer where he wants to make a reservation and for what dates, and at the same time can bring up Harrah's reservation system to see if a room is available. The agent asks if the customer is responding to an offer, which he doesn't even have to have in his hand at the time, as the Patron Database contains information on what offers have been sent to him. The reservation system then automatically searches the Patron Database to see if the customer has already received or redeemed the offer and if it is still valid.

It's this system's ability to drill into Harrah's extensive database, which in turn allows the company to customize its marketing and promotions to individual customers—particularly those at the lower end of the scale—that impresses industry observers.

"It has been able to retain those lower-end players by calling them up to ask them about their trips," says William Schmitt, executive director at the Canadian Imperial Bank of Commerce. "Retaining a customer is one-tenth the cost of getting a new customer."

Talk time has been reduced by an average of 12 seconds per phone call, according to Boushy, because employees no longer have to ask for information that other employees have previously asked for and they don't have to rekey that information.

However, the CRM strategy wasn't complete simply with the deployment of WINet. Harrah's also had to

radically change its relationship with its regional properties, which proved to be yet another painful process.

Before the Total Rewards program was rolled out in 1997, each of Harrah's properties basically operated as a separate fiefdom. According to Satre, this developed during the course of the early '90s expansion and is still common among Harrah's competitors today. Regional Harrah's managers, with turf to guard, were possessive of their markets, customers and data and had little but their own operation's bottom line on their minds.

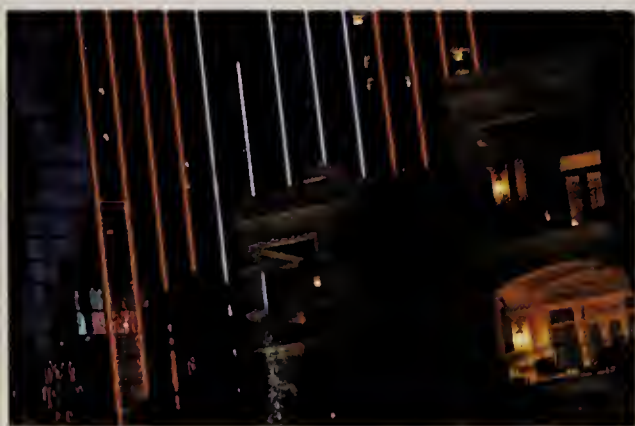
For Total Rewards to work, Satre says, they had to realize they were part of a broader system. "They needed to understand that what they did to support the over-arching goals of the corporation would also help their individual operations," he says.

Calling the Hand

Regional property managers were worried that promoting certain destinations to customers in those regions would draw business away from their properties, says Richard Mirman, Harrah's senior vice president of marketing. But, he says, Harrah's executives challenged that premise and instead

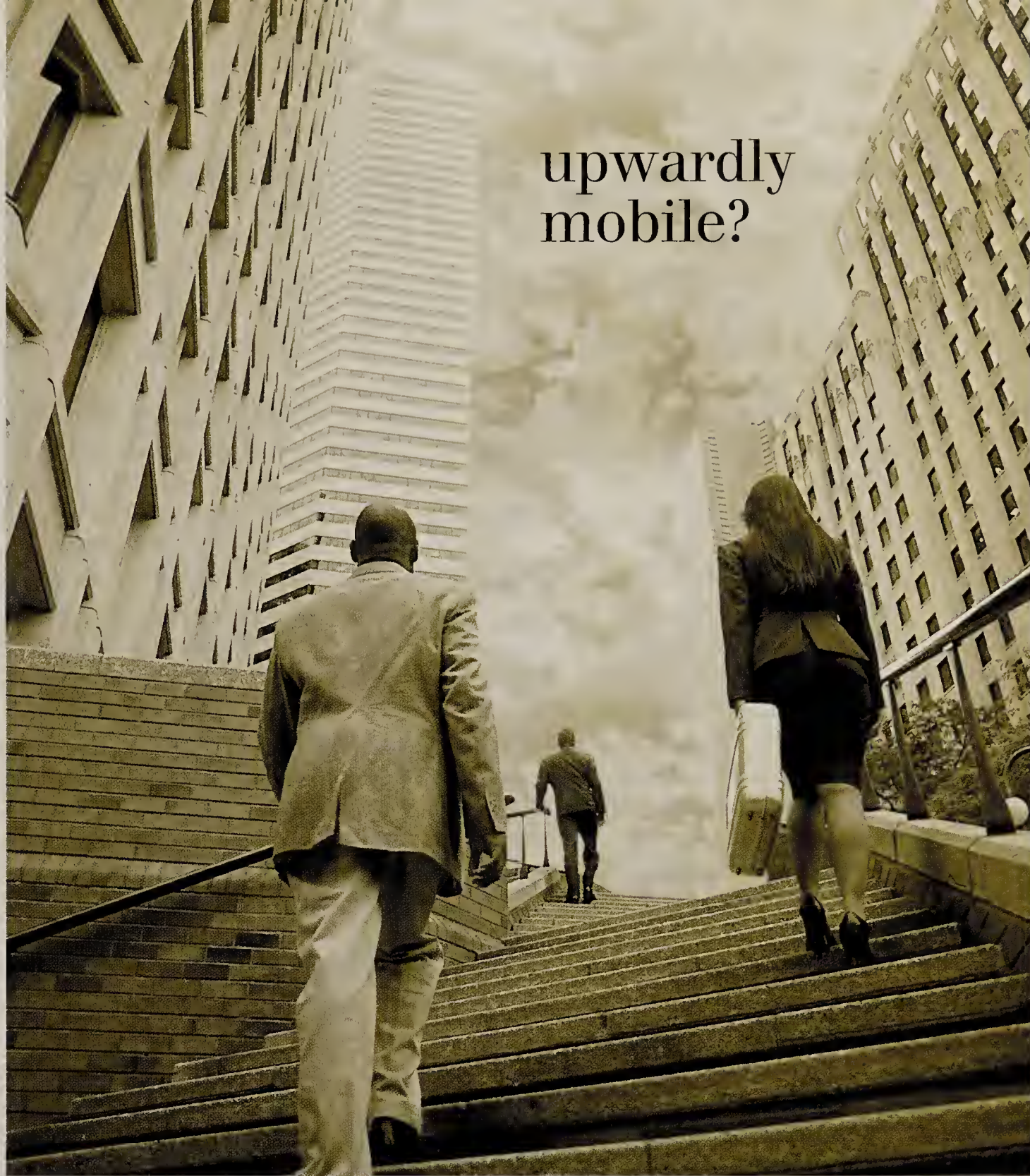


Richard Mirman,
senior VP of marketing,
*challenged managers to
share information.*



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ENTERPRISE VALUE AWARDS HARRAH'S ENTERTAINMENT

promoted the idea of the value of increasing cross-market visits.

The company eventually sold the regional properties on this new strategy. It argued that extending the benefits guests received for patronizing the casino in Joliet so that they could also use them at a casino in another region was important to customers. Satre was convinced of that based on the evidence his own satisfaction surveys had provided.

The corporate office also managed to convince the regional property managers that the IT capabilities and marketing tools it was developing would boost their businesses. For example, Harrah's developed a national promotion called "Millionaire Maker," which ties regional properties to select "destination" properties through a slot machine contest held at all of Harrah's sites. Satre makes a personal invitation to the company's most loyal customers to participate, and winners of the regional tournaments then fly out to a destination property, such as Lake Tahoe, to participate in the finals.

"Each one of these contests is independently a valuable promotion and profitable event for each property," says Satre. "These kinds of events link all of our brands and all of our properties together. We couldn't do this as efficiently and as effectively without information technology, and without having changed people's attitudes about their property, customers and employees."



None of that would matter, of course, unless it delivered on the bottom line. And that is what most impresses hard-nosed market watchers such as Marc Falcone, vice president of gaming and leisure for Bear Stearns in New York City, who says it highlights the ultimate success of Harrah's attempt to leverage IT.

Since Total Rewards began, Harrah's has saved \$20 million a year in overall costs, while increasing same-store sales growth. At the same time, the number of Harrah's customers playing at more than one of Harrah's properties has rocketed by 72 percent, and cross-market revenues have consequently zoomed from \$113 million to \$250 million.

Some \$50 million of the company's 1999 profit of \$594 million are directly attributable to an increase in revenues from cross-market visits. And more casino players today carry Harrah's player cards than any other card in the industry, by a factor of two-to-one, according to Harrah's own research. It's making the rest of the industry take notice.

"Total Rewards has forced other [industry] players to take a closer look at their operations, and at how they can increase their customer base," says Falcone.

Better yet, says Schmitt, people are not only looking at but are starting to copy Harrah's methods.

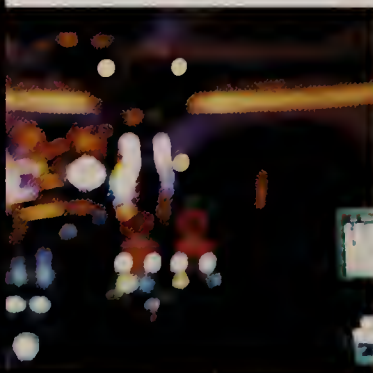
"Station Casino [a local casino operator in Las Vegas] has done the same thing as Total Rewards with its player card, [which it calls] the boarding pass," says Schmitt. "Park Place [Entertainment] is also looking to implement a national player card, as is MGM and Mandalay Bay [Resort and Casino]."

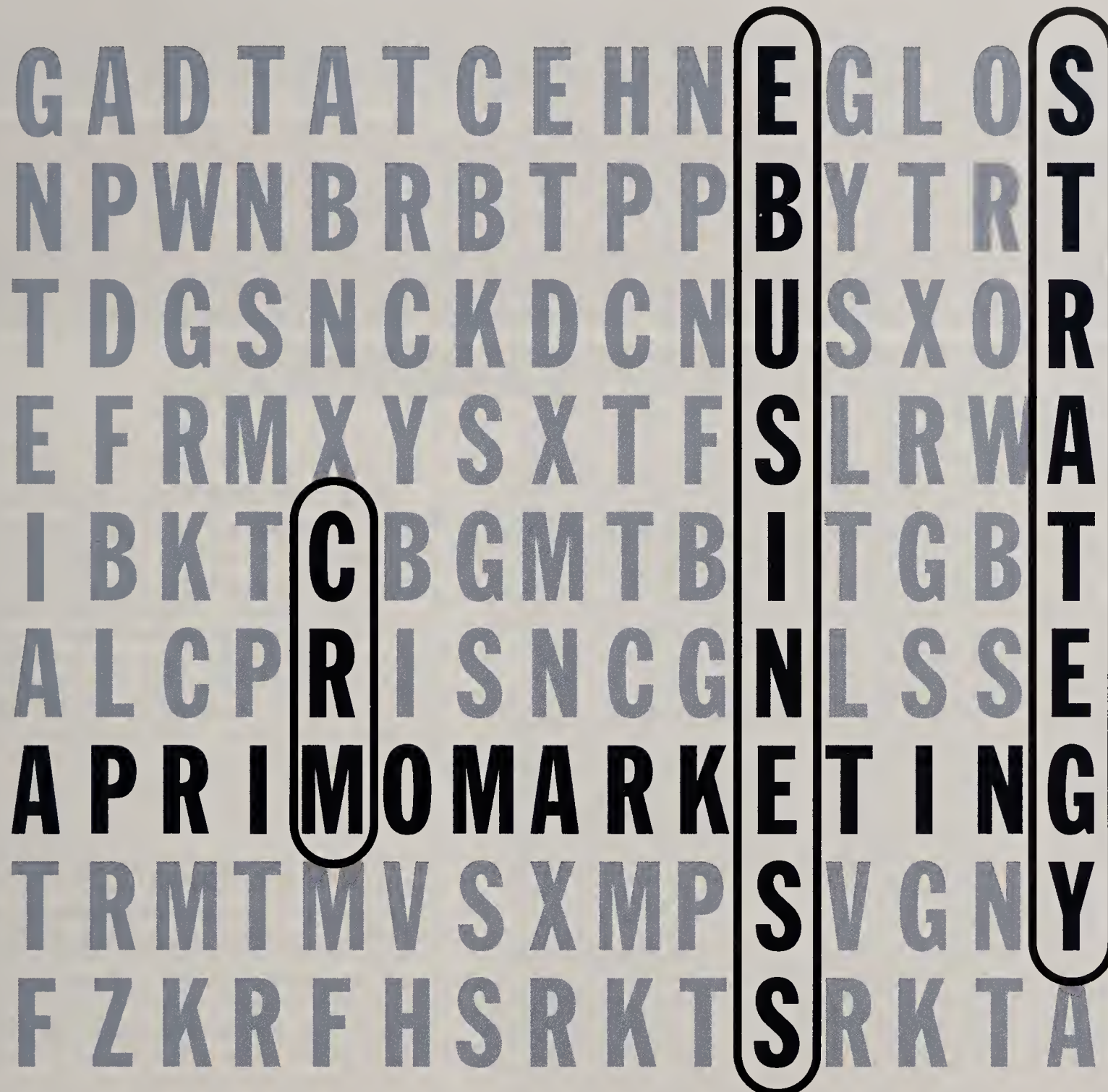
Faced with that emerging competition, Harrah's is looking to cement the lead its investments have brought it by patenting the technology it created to allow its mainframes to talk to the Unix boxes. As Boushy puts it, if Harrah's protects its innovations now that gives it an advantage in the future, whether it decides

to use those innovations offensively or defensively.

In a cutthroat industry where every little bit of muscle counts, Harrah's is betting that IT will be its edge. **CIO**

Though she doesn't like to gamble, Senior Writer Meredith Levinson wants to hear about your bets on technology. Write her at mlevinson@cio.com.





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POINT OF VIEW

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Based on Microsoft Windows 2000, Compaq's TaskSmart N-Series Network Attached Storage appliance makes it easy to deploy and manage advanced file storage.
www.windows2000advantage.com/pov/09-29-00_tasksmart.asp/500

TECH EDGE

Microsoft and Compaq take aim at ASP model

Microsoft and Compaq were at the recent IDG ASP World Conference with an impressive array of product and support offerings. This article looks at Microsoft and Compaq and the rapidly emerging ASP environment.
www.windows2000advantage.com/tech_edge/10-25-00_aim_at_asp.asp/500

Q & A

Microsoft VP Jim Ewel portrays Windows 2000's role in the business Internet

Jim Ewel, vice president, Windows .NET server marketing, has played an important role in some of Microsoft's prominent products.
www.windows2000advantage.com/qa/10-0600_role.asp/500

COLUMNS

Implementing service levels key to .NET success

Microsoft recently unveiled its .NET platform in San Francisco. The .NET platform evolves the current DNA programming model into one that is more in tune with the World Wide Web.
www.windows2000advantage.com/columns/10-23-00_service.asp/500

CASE STUDIES

Windows 2000 fever can be infectious. Just ask Datareturn.com

After testing Microsoft Windows 2000 Advanced Server as part of Microsoft's Joint Development Program, Datareturn.com migrated its Web site.
www.windows2000advantage.com/case_studies/09-18-00_infectious.asp/500

Q&A >

Brian Valentine: Chief cheerleader, driving force

Brian Valentine is a key player in Microsoft's Windows division, where, in addition to being "chief cheerleader," as he describes himself, he is also a driving force behind the evolution of Microsoft Windows 2000. A 13-year veteran of the company, he started as an engineering manager and worked his way up the ranks to manage the Microsoft Exchange and Microsoft BackOffice family product units. He recently spoke to Windows 2000 Advantage editorial director Bruce Hoard about the evolution of Windows 2000.

For the full story, visit:

www.windows2000advantage.com/500

2000 GENERATION >

Aventis Pharma simultaneously implementing Windows 2000, Exchange 2000

Tackling a Windows 2000 implementation in itself is no easy task. Now imagine doing an Exchange 2000 rollout at the same time, while simultaneously upgrading hardware and the desktop – and you get an idea of the challenges currently faced by Aventis Pharma.

For the full story, visit: www.windows2000advantage.com/2000gen/11-13-00_aventis.asp/500

CASE STUDY >

Windows 2000 Group Policy can cut support costs, but requires up-front planning, training and testing

The Group Policy features within Microsoft Windows 2000 can make it easier to fine-tune user access rules and even lock down desktops so users can't fiddle with their systems. But moving to Group Policy from the Microsoft Windows NT 4.0 domain structure requires a lot of planning, training and testing.

For the full story, visit: www.windows2000advantage.com/case_studies/11-06-00_grouppolicy.asp/500

www.Windows2000Advantage.com/500

MOMENTUM SERIES >

As Windows 95 phases out, Microsoft and Compaq offer tools to ease the move to Windows 2000 Professional

Five years after its introduction, Microsoft Windows 95 is nearing retirement. For business customers still running Windows 95, upgrading to Microsoft Windows 2000 Professional will create far more stable and manageable client workstations. Microsoft and Compaq are offering a variety of software tools and services to ease the migration pains.

When Windows 95 was first introduced, it was a major leap in reliability and ease of use for Windows clients. But during the five years since, Microsoft has upgraded its PC operating system offerings with Windows 98, Windows 98 Second Edition (SE), Windows NT 4.0 Workstation, Windows Me and Microsoft Windows 2000 Professional, which Microsoft and Compaq are promoting as mainstream client platform for business professionals.

Now, those customers who have stuck with Windows 95 "are pushing real hard for Windows 2000," says Richard Ashe, manager of PC Lifecycle Solutions at Compaq. "Those are the people in a hurry."

They're hoping that the improvements in Windows 2000 Professional, which is based on Windows NT technology rather than the older Windows 3.x code base, will make users' PCs more stable, faster-performing and easier to manage over time. Acknowledging that software upgrades can be difficult and expensive, both Compaq and Microsoft are offering migration tools to ease the shift to Windows 2000 Professional as Windows 95 moves toward retirement.

For the full story, visit: www.windows2000advantage.com/momentum/11-06-00_95phaseout.asp/500

QUOTE OF THE WEEK >

"Third-party vendors all say they're Windows 2000 ready, but if you don't do a test, you'll be in trouble."

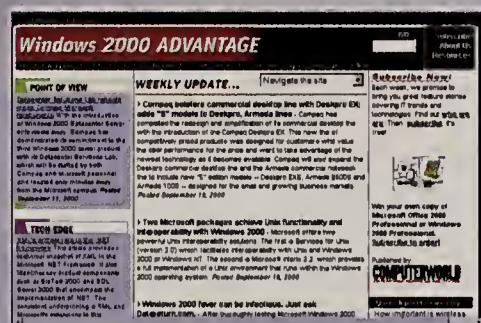
— John Wolfe
systems analyst in
Energy Wholesale Operations
Entergy Corp.

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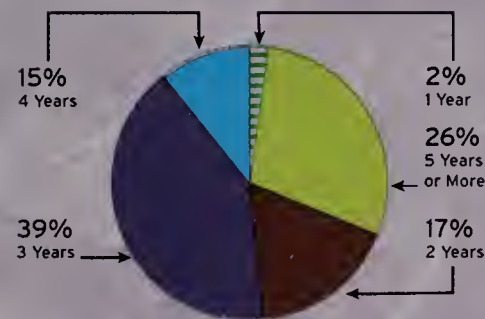
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ENTERPRISE VALUE AWARDS **OFFICE DEPOT**

HEADQUARTERS

Delray Beach, Fla.

CORE BUSINESS

Office supplies, equipment and services

FINANCIALS

1999 total sales: \$10.3 billion

1999 Internet sales: \$349.7 million

EMPLOYEES

45,000

URL

www.officedepot.com

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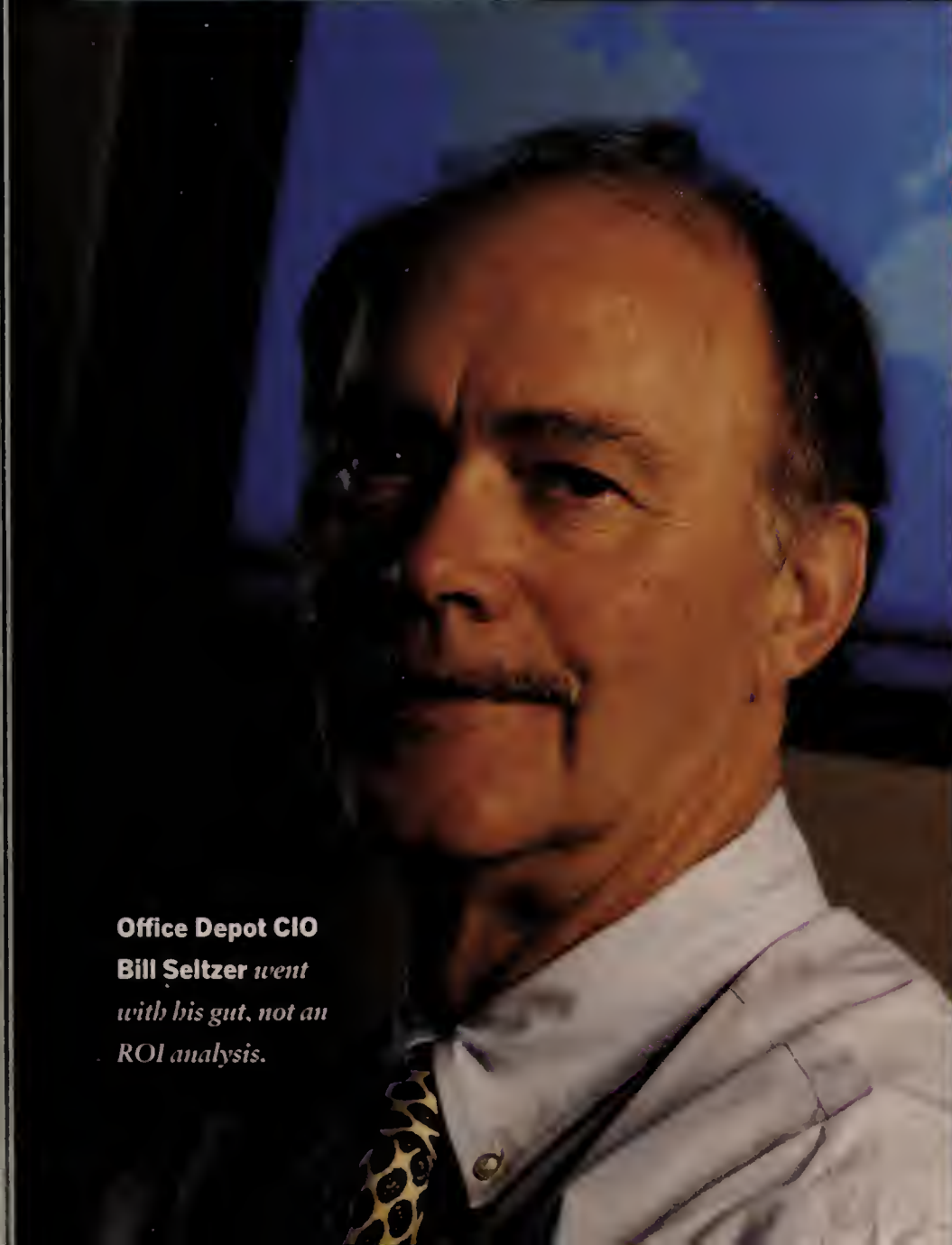
Office Depot built its online success on a solid brick-and-mortar foundation

If you're a traditionalist, don't read this. When Office Depot decided in 1997 to expand its Web operation into a full-blown B2C site, it opted not to do an ROI analysis, something almost unheard of for a company its size. Instead, Executive Vice President and CIO Bill Seltzer, Executive Vice President of E-Commerce Monica Luechtefeld and then-Chief Executive David Fuente made a gut-check call that online purchasing was about to explode, and it would be

WHY OFFICE DEPOT'S RISK WAS REWARDED

Office Depot's 1997 decision to plunge ahead with a radical Web expansion has given it the lead in the retail bricks-to-clicks race. The company fully integrated its website with its back-office systems, and it is using the site to fuel its expansion into new markets.

BY ERIC BERKMAN ■ PHOTOGRAPHY BY PAUL MORRIS



Office Depot CIO
Bill Seltzer went
with his gut, not an
ROI analysis.



ENTERPRISE VALUE AWARDS OFFICE DEPOT

worth whatever it took for Office Depot to be there first. Three years later, that call has turned up nothing but aces.

In 1999 the company racked up \$350 million in Web-based sales—400 percent more than the previous year—and expected to push that to more than \$800 million in 2000. Meanwhile, inventory turnover has increased from four times a year in 1996 to six times today, and it's still rising. And the company has secured huge online sales contracts with industry leaders such as General Electric, MCI WorldCom and Proctor & Gamble.

Seltzer, who spearheaded the project, says Office Depot will have generated 9 percent of its overall revenue from the Web in 2000, and he believes it will double that figure this year. "No other retailer is converting from bricks to clicks at this rate," he says.

With all of this success behind Office Depot, and much more potentially to come, it's interesting to note that the company's original decision to go online was academic—literally.

In 1994, MIT invited the Delray Beach, Fla.-based company to take part in an experiment in which a group of MIT's suppliers would build websites that MIT would make purchases from. Office Depot reckoned, as did the other companies, that it would be smart to indulge an important customer. But it also saw beyond what



would otherwise have been a one-shot deal. This experiment was an opportunity to explore the Internet's potential as a distribution channel when few people even knew what this strange new medium was.

The MIT project eventually begot B2B Web channels for dozens of the company's corporate customers, generating more than \$60 million a year in three years. In 1998, after a feverish three-month development, the company launched OfficeDepot.com, a full-scale e-commerce site for small-business and individual customers. Today, Office Depot is arguably the leader in the retail industry's rush from bricks to clicks.

It's hard to know that for sure, but industry observers see the company's increase in online revenues as a strong indicator. Steve Zrike, a senior analyst who covers online retail for Forrester Research, confirms that it's an impressive conversion rate. "The fact that they're doing this much just through the Internet is pretty significant, given the tiny percentage of customers who could actually get online before the beginning of 1999," Zrike says. Revenue isn't the only thing Office Depot is getting from the Internet. Seltzer estimates that each online transaction is at least 1 percent cheaper to process than one that's phoned or faxed in, which adds



What Keeps Customers Supplied

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"We saw the website as an integrated part of the whole," says CEO Bruce Nelson.



OFFICE DEPOT **built**
ITS **own** WEBSITE IN
THREE **months.**

up when you are talking about tens of millions of dollars in sales.

But perhaps the most significant result of the company's move to the Web has been the evolution in Office Depot's corporate mission. As B2C sales have taken off, the company has realized it can be many more things to more people. Instead of just supplying companies, Office Depot is helping them run their businesses through an array of free human resources handbooks, business tools, online forms, news and links to other business information providers.

The decision to plunge headlong into developing a B2C site was probably made a little easier because the company was groping for direction following a failed merger with Staples, its chief competitor. The need for a jolt of energy was obvious. Nevertheless, once the corporate brass made its commitment to launching the site by January 1998, the software development team faced a hellacious three-month span to write all the code and get things up and running.

That sounds like brinkmanship, but it was a strategic decision that paid off. And doing it without an ROI analysis—and winning—attracted the attention of this year's Enterprise Value Awards judges. "They didn't need to explicitly cost it all out in terms of numbers to know something [made] good sense," says Doug Barker, CIO of The Nature Conservancy and one of the awards judges. "I found the whole approach really refreshing."

Another decision that eventually panned out well was to treat the Internet as simply another distribution channel instead of an entity all by itself. "We saw [the website] as an integrated part of the whole," says CEO Bruce Nelson. That stood in stark contrast to the approach of other retailers that got caught up in the dotcom frenzy and spun

off their Internet projects as separate business units. Office Depot's shareholders, who likewise hoped to hit the IPO mother lode, cried foul at the time. But now the company has a system that is consistent across the range of its customer contacts, while other retailers struggle to retrofit online resources into their infrastructures.

"The customer experience has to be consistent at any point where the customer might interact with your brand, which necessitates one view of the customer," says Tracy Thorne, an e-business strategies analyst with the Hurwitz Group. "Office Depot has gotten this for a long time."

To other observers, Office Depot's



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THE CIO IN THE NEW WORLD

april

22 - 24, 2001

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KEYNOTE PRESENTERS

Gary Hamel

Author

Leading The Revolution

Joanne Ciulla

Author

*The Working Life: The Promise
and Betrayal of Modern Work*

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WORLD — reshaped by the Internet, e-commerce, global mergers and alliances. Radical change has caused continual

shifts in an already complex IT environment, and traditional boundaries continue to be redrawn or virtually erased — between countries; between cultures; between companies and their customers, partners and competitors; between IT and the rest of the organization. Envision what's next — and prepare for it.

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In this turbulent new world, where irrelevancy may be a bigger risk than inefficiency, we'll need to continuously re-evaluate and reinvent – maybe even get revolutionary. And who better to lead the revolution than Gary Hamel, the man *The Economist* calls “the world's reigning strategy guru.” Hamel will help us cross the boundaries between old and new ways of thinking about strategy

innovation, wealth creation, and the very process of continuous re-invention. He'll deliver Tuesday afternoon's keynote address, and will be on hand afterwards during a networking reception. Conference participants will receive a signed copy of Hamel's newest book, appropriately titled *Leading The Revolution*, which recently headed Amazon.com's chart of top business tomes.

Also joining us will be author Joanne Ciulla, whose new book, *The Working Life: The Promise and Betrayal of Modern Work*, Warren Bennis calls “a serious and thoughtful book, a book I've been waiting for for a long time.”

Our continuing series of dialogues with The US Department of Commerce's Critical Infrastructure Assurance Office (CIAO) will explore what business leaders, CIOs, and government agencies can and should be doing to protect ourselves.

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Joanne Ciulla
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Nasdaq Stock Market, Inc.

Stephen Colo
CIO
United States Secret Service

Tom Field
Executive Editor, Editorial & Community Development
CIO Magazine

Martha Gorman
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THE CIO IN THE NEW WORLD



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WHAT ARE YOUR ORGANIZATION'S ANNUAL REVENUES OR ASSETS?

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YOUR NAME AS YOU WANT IT TO APPEAR ON YOUR BADGE

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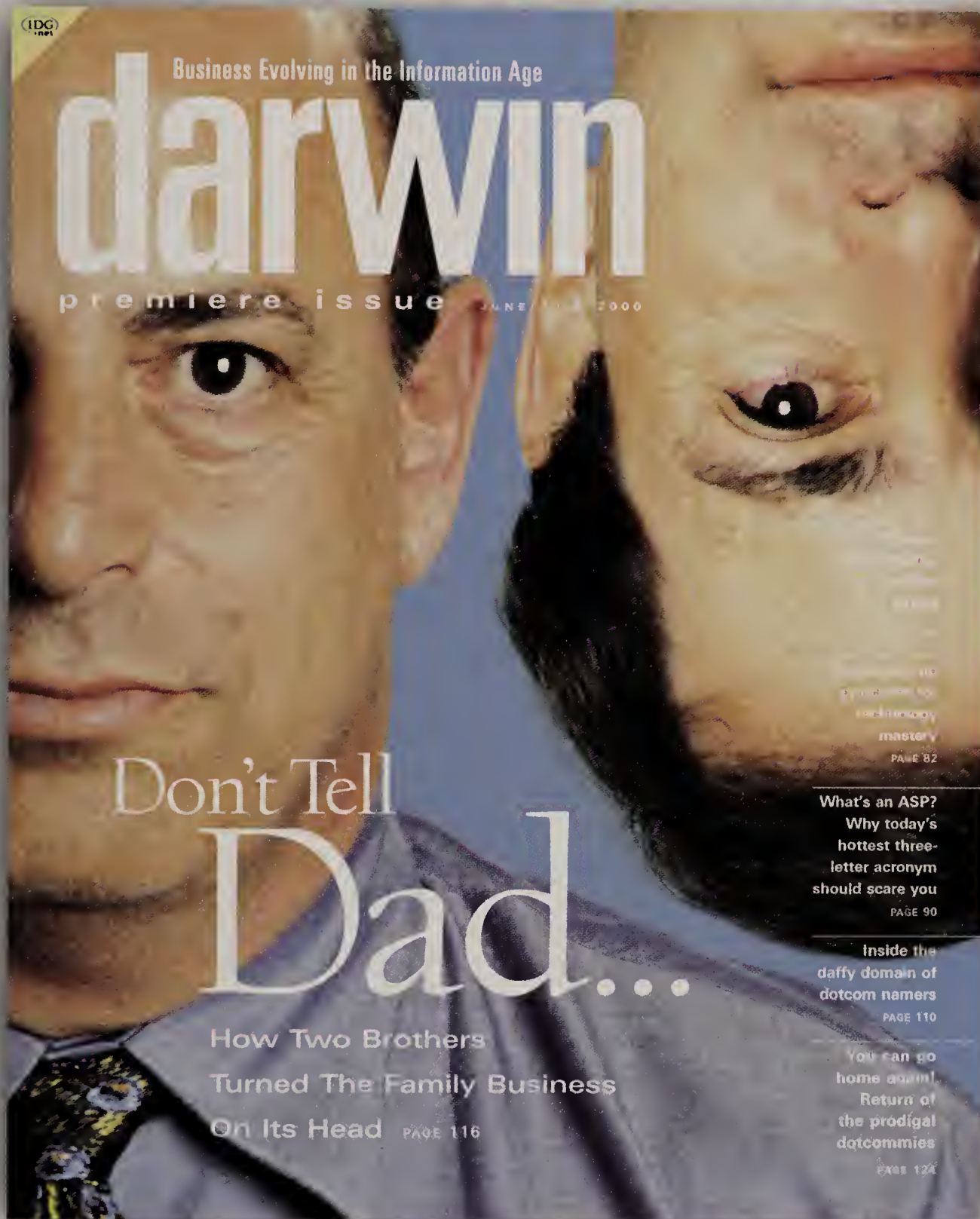
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ENTERPRISE VALUE AWARDS OFFICE DEPOT

decisions show how it has raised the bar in terms of building an Internet presence without losing focus as a business.

"A lot of what's going on in e-business right now is how brick-and-mortar companies can take their brick and mortar and turn it into an advantage," says Peter Solvik, also an awards judge and the senior vice president and CIO of Cisco Systems. "Clearly, in its market [Office Depot] is miles ahead."

That future was not so assured when the company first decided to launch OfficeDepot.com. All it had to go on was faith.

During the first part of 1997, the executive committee met with retail analysts and concluded then that a full-scale move to the Web was an opportunity it couldn't afford to miss. Online retail appeared to be taking off, and companies such as Amazon.com were setting the pace. The analysts also told Office Depot that office supplies would sell well over the Internet. After all, they reasoned, ink-jet cartridges, pens and paper are nonperishable items, and people usually know exactly how much they need.

Equally important, as a bricks-and-mortar company, Office Depot realized it had the infrastructure in place to make the whole thing work. "We saw online sales as something that would fit our model very nicely," says Seltzer. "Especially since we had our own delivery centers and delivery trucks."

The company was up against some timing pressures. Staples was rumored to be prepping its own website for launch in January 1998 (though it didn't launch until that summer), and Office Depot didn't want to lose the market space to its competitor. Also, the high season for office supply retailers is the first quarter of the year, and the company wanted to be ready with its site to meet demand.

Most important, however, Office Depot prided itself on its entrepreneurial culture and didn't think it needed to ruminate over decisions that had obvious benefits to customers.

If people wanted to buy online, the company felt it had to make it happen. "ROI's a good tool, but it's not the be-all and end-all," says Rob Koch, vice president of corporate finance. "Some decisions are purely strategic."

Besides, says Seltzer, with no way to predict what kinds of sales would be generated through such a new medium, any ROI analysis would be guesswork. Doing without one saved the company three to four months in getting the website up and running.

"If you do ROI, you spend a lot of time arguing about numbers, and we were able to save that time," he says. "It was

pretty much an act of faith in our industry and our technology."

For the seven-person team that developed the site—led by Michael Kirschner, vice president of e-commerce development, and Tim Toews, senior vice president of international systems development—it was an exhausting but exhilarating three-month marathon.

"At the time, the company was just reeling from the failed merger [with Staples]," says Seltzer. "We may have been working 17 hours a day, seven days a week through Thanksgiving and the holidays, but this gave people something to focus on, which was huge."

The person in charge of infrastructure for Office Depot's international e-commerce sites, Bob Conklin, who helped build the infrastructure for the website, describes the experience as a "brave new frontier."

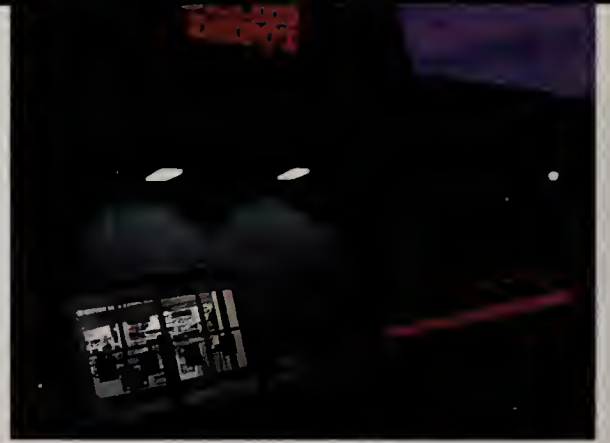
"We truly believed we had to be the first movers and get in quickly, but there weren't the tools, procedures and disciplines in place that you have now," he says. "There were a lot of sleepless nights, pagers going off, and those 2 a.m. moments when something crazy occurs and it's all hands on deck."

Seltzer insists there was method to the madness. He believes that when you do something quickly in a high-pressure environment, you end up with a better and more valuable product. That's what happened in this case, he says, adding that the frenzied pace helped create a huge boost in corporate morale. "People don't mind working long hours if what they're doing is really contributing a lot," he says.

However, it's one thing to get a website up and another to make it work. Enterprise Value Awards judges give a lot of the credit for the success of the Office Depot site to the integration between the company's various distribution channels and its back-office functions.

The ability to get the websites up and running quickly was based on a years-old data architecture that Seltzer helped devise in the 1980s at a supermarket chain and replicated elsewhere. It is composed of seven basic databases that store any piece of information that might be needed throughout a retail system, be it in a call center, for shopping online, by someone working in accounts receivable, or for purchases made at a physical store. It doesn't distinguish between channels, and the information is consistent throughout no matter where the information is accessed. All front-end activities, regardless of channel, are integrated with back-end functions such as billing and order processing.

Simply put, this means the system doesn't care whether someone is ordering by phone, fax or over the Internet. A person can go on to the Internet and check to see if something's in stock at a local store before making a trip there, or track the status of an order online even if the purchase was made over the phone. This isn't the expe-





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rience a customer would have with less integrated systems, where he may have to go to any of five separate channels.

"The data architecture is bedrock," says Seltzer. "We've spent a lot of time doing it right."

It was invaluable in establishing the Web presence so quickly since it made its integration with the rest of Office Depot's system relatively painless once the company decided not to spin off its online business. It also fostered scalability because it's been easier to build new features onto a simple, clean system, Seltzer says.

For example, Office Depot is now using the Internet to expand its international presence through its wholly owned subsidiary, Viking Office Products. Employing a data architecture in Europe that's the twin of the one Seltzer built in the United States has simplified creating new websites in different countries using minimal resources. Office Depot has opened 19 international sites so far.

"The architecture in all countries is the same," Seltzer says. "So our front end just varies by language and adjustment for local laws."

In the United States, Office Depot's suppliers are seeing an immediate return from the company's integrated approach to the Internet. The company has used its experience with the website to create an extranet for its vendors so that they can set up product items and descriptions, and check the levels of inventory by location.

"It brings value in that it gets information into our system without [the need for] human interface," says Seltzer. "For us, it means labor savings and accuracy. For [the vendors], they no longer have to sit down, write us a letter and mail it, or convey information through a sales call. The feedback we're getting is that they love it."

But it's the change to the corporate mission that could provide the biggest added value of all from Office Depot's move to the Web. It

relaunched OfficeDepot.com in August last year as a full-service provider of business resources, news and information. Now small



Office Depot
HAS WEBSITES IN
19 countries.



Monica Luechtefeld,
EVP of e-commerce,
believes the Web
gives a leg up to small
businesses.

businesses can use the site for a range of things, from purchasing a video on how to capitalize assets to getting information about how to send press releases. Office Depot gathers the site's content from professional editors, consultants and other partners, and gives visitors free access to all of it.

Meanwhile, the company has plans for other online services, such as assistance for people who are trying to select the best wireless plan, a website that can be accessed by mobile devices, and a communities feature it aims to have in place in early 2001. "In the next 12 to 18 months, small businesses will have everything it's taken larger companies years to build," says Luechtefeld.

Seltzer concedes that these additional services may not mean big bucks for Office Depot, but they're worth offering if they get people to come back to the site over and over again.

"There's value if you can build a sense of community among small businesses and yourself," says Seltzer. "You're doing more than just being a provider of supplies. You're being a friend to small businesses. And people buy from their friends." **CIO**

Have you had e-commerce adventures? Tell Senior Writer Eric Berkman at eberkman@cio.com.



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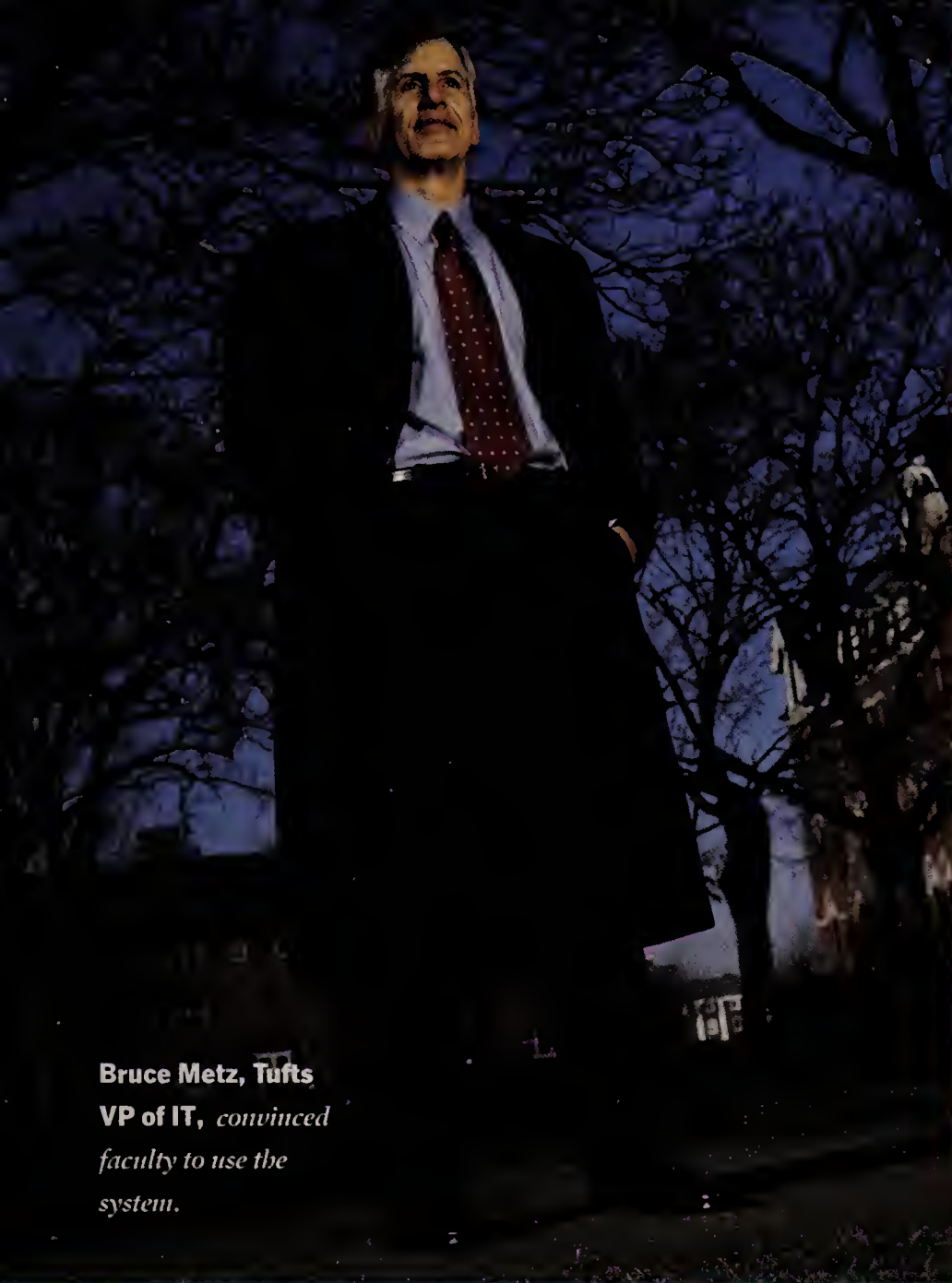
A university's knowledge management system is transforming medical education

Ethel Bullitt had a severe case of medical student amnesia. After two years of cramming her brain with thousands of new biomedical terms, images of cells, symptoms of diseases and drug interactions, her memory had turned to mush. In a few days, the 25-year-old Tufts University medical student would have to report to her first clinical rotation in surgery. Her worst fear: forgetting everything she'd ever learned.

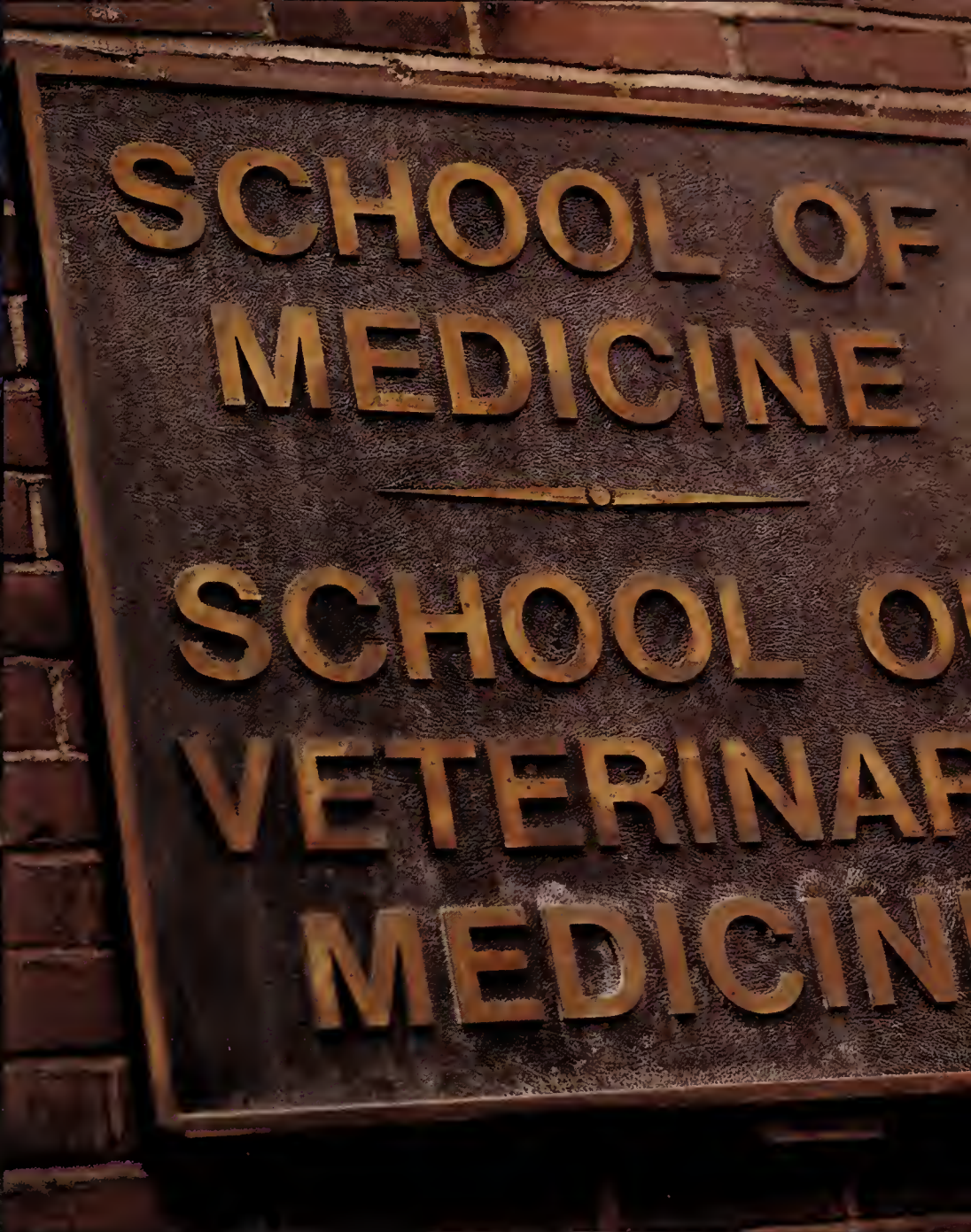
WHY TUFTS' HEALTH SCIENCES DATABASE EARNS HONORS

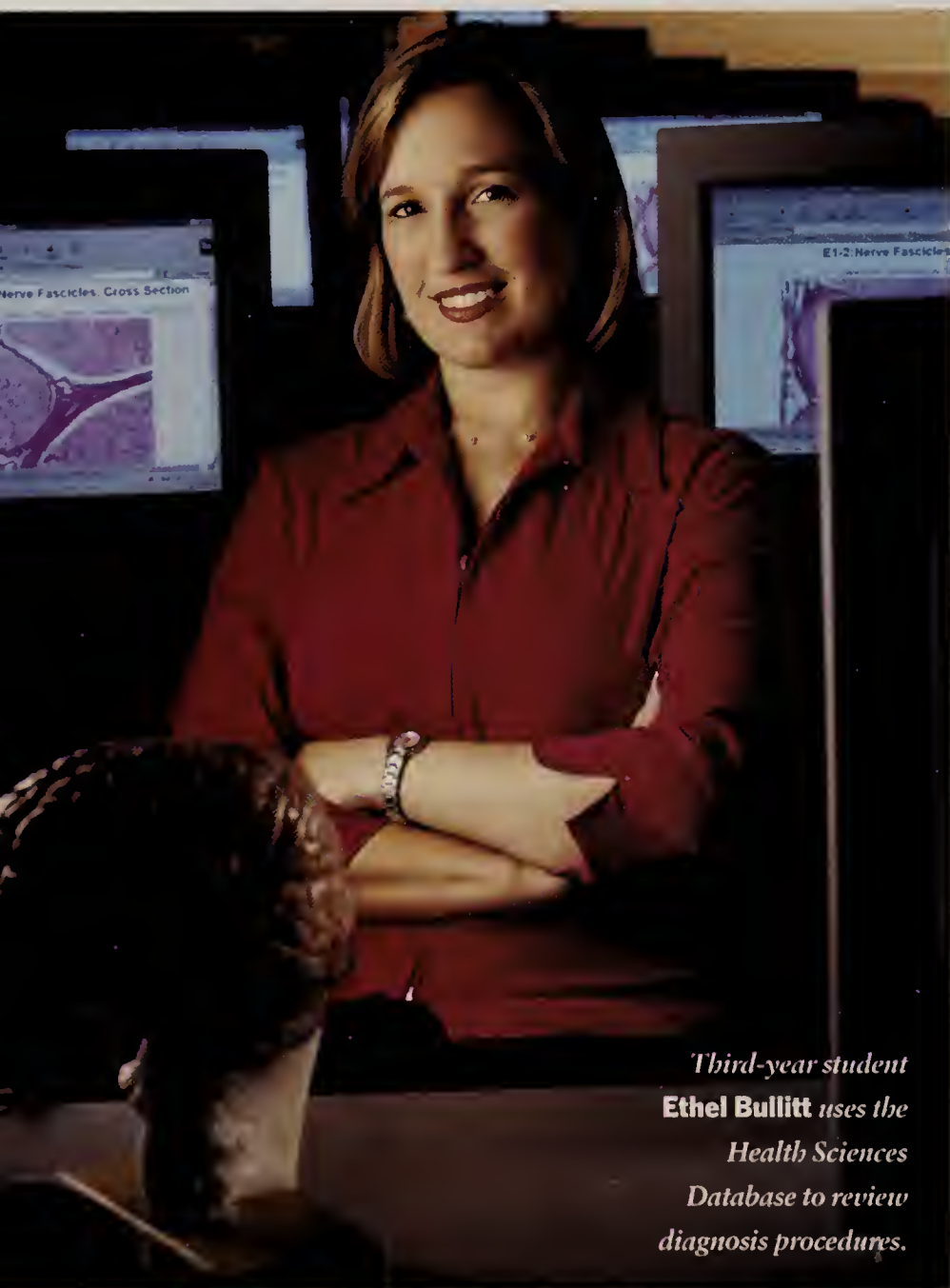
Tufts' Health Sciences Database sets the standard for medical school knowledge management systems. Medical, veterinary and dental students use the website to study. Among its benefits, the system helps students master course material, keeps the curriculum up-to-date and increases organizational efficiency.

BY ANGELA GENUSA PHOTOGRAPHY BY WEBB CHAPPELL



**Bruce Metz, Tufts
VP of IT,** *convinced
faculty to use the
system.*





*Third-year student
Ethel Bullitt uses the
Health Sciences
Database to review
diagnosis procedures.*

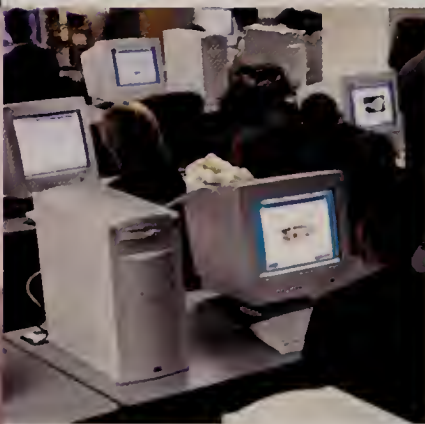
Bullitt began second-guessing herself: What is the proper way to listen to a patient's heart and lungs? What are the proper steps in examining the knee? So before she ever stepped into a teaching hospital, Bullitt went to her school's website and logged on to the Health Sciences Database—a virtual medical student's brain containing lectures, lab slides, anatomy illustrations and her own notes—and reviewed physical diagnosis procedures. "It's great to be able to have this kind of backup when you're feeling a little shaky, because surgery rotation is a grueling experience," she says. "You have to determine how the patient is doing, and you need to be sure you are right. The surgeons are basing some of their decisions on what you tell them."

Bullitt's experience is one example of how the Health Sciences Database is transforming the way Tufts trains physicians, dentists and veterinarians. No other medical school in the country—and Tufts University School of Medicine in Boston is among the top-ranked—has created this kind of KM system for students and faculty. Tufts credits the system with helping students to master course material more easily, keeping the curriculum up-to-date and increasing organizational efficiency. The system is becoming a national model for medical education.

Not only did Tufts put together a model system, it did so at a time when medical schools and teaching hospitals face tremendous pressures. The demands of managed care have squeezed faculty time. Declining insurance reimbursements for patient care services have cut into revenue. And federal and state funding for treatment and research has diminished. Yet the system evolved in a culture of innovation and creativity at Tufts that stayed focused on continually

improving education. "The challenge now is for IT to provide the tools to develop a potentially more effective model for educating medical students," says Bruce Metz, vice president of information technology at Tufts.

CIO awarded Tufts a 2001 Enterprise Value Award because its contribution to medicine far exceeds mere financial return on investment. "Educational institutions need role models, and Tufts is one," says John Glaser, vice president and CIO at Partners HealthCare System in Boston, one of this year's judges. "In training physicians and health-care professionals in a complex, volatile industry that is less amenable to time restraints, managing and keeping course



Number OF
INSTRUCTION **hours**
IN THE FIRST TWO
YEARS OF MEDICAL
SCHOOL: **8,270**



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material current and integrated is crucial. Tufts has taken on a very messy educational challenge, done an extraordinary job of sizing up that challenge and is doing some pioneering work.”

Down from the Ivory Tower

Call Elizabeth Eaton a pioneer, but she prides herself on being a pragmatist. The director of Tufts’ health sciences library learned in the late 1980s of a new project by the American Association of Medical Colleges (AAMC) in Washington, D.C., and the U.S. National Library of Medicine (NLM) in Bethesda, Md., to explore the use of technology in library information management at medical schools. Her mission: to get Tufts’ foot in the door. The project meant obtaining the backing of two of the nation’s most powerful medical organizations. It also meant money—big money. Eaton wanted Tufts to stake its claim to the hundreds of thousands of dollars in NLM grants.

Eaton got what she was after. Tufts received its first \$241,000 grant in 1990. The medical school also chipped in startup funds. To decide how to use the money, she convened a planning team, including members from the health sciences library, the educational dean’s office, IS and administration. The team held a marathon of more than three dozen focus-group sessions with faculty and students to find out how technology could help them teach and learn. From the long wish list, one item leapt out: a library of digital images of laboratory slides that faculty use to teach students how to identify cells, tissues and microorganisms.

Each semester, demand for these slides created chaos, especially just before exams, when hundreds of students would descend on the library to view the only two slide carousels that the university could afford to create.

Faculty members were also distraught because over the years many slides—some of them rare

NUMBER OF **bio-medical** TERMS MEDICAL STUDENTS LEARN IN THEIR FIRST YEAR: **10,000**



Elizabeth Eaton, head of Tufts’ health sciences library, helped create a digital image collection.

and more than a century old—had been destroyed, misfiled or had disappeared from the library altogether.

The decision was unanimous: They would build a digital image library. The team chose to use database technology to build the system—a decision that would prove to be prescient. “One of the most important things that we did was think database in terms of organizing the information,” Eaton says. “Of course, librarians have been thinking that way for a hundred years, so it’s not hard to understand how we got to that point. But a lot of schools didn’t do that.”

Choosing the right technology wasn’t Tufts’ biggest challenge. The greatest hurdle was changing organizational culture. When asked for her opinion about the database, Mary Y. Lee, a physician and the medical school’s dean of educational affairs, told Eaton, “The students will not use the system unless it’s connected to the curriculum.” Eaton now had doctor’s orders: create content, content, content.

And there was plenty of content to be had. In Lee’s office suite towers a 6-foot-high by 4-foot-wide bookshelf, crammed end to end with three-ring binders stuffed with course materials for the first two years of medical school. The keepers of this information trove? The faculty. Handing over their slides to be digitized was one





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thing, but turning over their course materials was another. "Initially we had a lot of faculty—screaming is too strong a word, but close to screaming at me—saying that I was going to replace them," Lee says. "I was ruining medical education by replacing them with machines."

Winning faculty buy-in took a tag-team effort. Lee reassured faculty the system was not intended to replace traditional medical education methods. Metz explained how IT could help alleviate larger economic pressures facing Tufts by reducing costs and increasing efficiency. But Metz closed the deal by telling them the system could improve their effectiveness in the classroom. "In higher education, people have been teaching the same way for centuries," he says. "The truth is that they've been doing it very well. But to point out that a new model of education can work with a higher level of quality—that gets people's attention." The team found instructors who had been using the Internet since its early days and were eager to put their material online. Then, other faculty wanted to try the system too. Soon instructors began collaborating to create and integrate course content. "Initially, we had some very strong opponents who became extremely strong proponents after they started using it," Lee says.

When the site made its debut in September 1997, students raved to

their instructors about having around-the-clock access to course material on the Web. "The great thing was being able to look at the slides at home," says Bullitt, who lives 20 miles from the downtown Boston campus. Using the website as a personal knowledge management system, she organized her course materials into her own folders and made frequent electronic notes. "It's like having an annotated textbook that I could use anywhere, anytime," she says.

In a sort of collective "aha!" faculty and students realized that the system could do much more than digitally duplicate textbooks and lab slides. Ideas for new applications and features snowballed. Eaton's development team worked nonstop to keep up with requests to put content online, including post-course evaluations by students and class schedules.

Despite the momentum—and more grants—the development team recognized that the system could not survive indefinitely on grants alone. So in 1999, the team began drumming up support from Tufts' veterinary and dental schools, adding some of their course materials to the database as a trial and proposing a budget in which all three schools would support the system.

Today, the system contains approximately 70 percent of the medical school curriculum and a smaller percentage of veterinary and



Mary Y. Lee, dean of educational affairs,
saw the need to connect the database to the curriculum.

Vital Statistics

COST: \$455,000 for system development; \$130,000 annually for operations and maintenance.

HARDWARE: A Unix server from Sun Microsystems runs the database and server software.

SOFTWARE: MySQL, an open-source SQL relational database developed by MySQL AB and partners. Macromedia Dreamweaver for Web authoring; Adobe Illustrator, PhotoShop, Adobe Premier, Macromedia Director and Shockwave to create multimedia files for the Web; RealNetworks encoders for video and audio.

NETWORK: WAN supports voice, video and data communications to 145 buildings on three campuses. Gigabit-speed Ethernet data network connects these buildings to the Internet 2, an ultra-fast academic research network. Remote access by password through the Internet.



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dental school courses. It has evolved from a simple digital image library to a knowledge management system that integrates complex layers and levels of medical information across many disciplines. "It's more than just throwing a bunch of images into a file," says Richard Jakowski, a professor at Tufts' veterinary school. "You have to integrate them with text, put them in the right spot and make them mean something. Otherwise, you're getting a pop when you can make an atomic bomb."

A Big Bang for Education

Talk about a KM explosion at Tufts. Although there is little quantitative evidence so far that the system is directly improving students' comprehension or increasing exam scores, anecdotal evidence abounds that the project is creating value. Lee says students report they're learning material faster and more easily. Faculty say that lectures have become more interactive. The system also seems to be transforming traditional, didactic medical education at Tufts into a model of self-directed study more common in other graduate school programs. "That's what's so exciting about this," says Anthony Schwartz, associate dean for academic and outreach programs at the veterinary school. "Students learn best when you provide them with this kind of structure—with links to where you would like them to go—and then turn them loose. They're not only going to learn what they need to get through school, but they're going to explore areas they couldn't otherwise."

Tufts is the only health sciences school in the country that has integrated its curricula so that students can transcend course-, discipline- and profession-specific boundaries. "The interdisciplinary implications of this system are very powerful," Schwartz says. For example, medical students studying salmonella in humans can link to veterinary school material to learn about the source of the bacteria, its effect on chickens and cattle, ways it is transmitted to humans, prevention and treatment. "These kinds of concepts can be taught not by new courses, but by cross-disciplinary linkages so that students have a direct understanding," he adds.

More than 100,000 connections between courses and atoms of content within the system help students understand. Because the data is entered in Lego-block-like chunks, changing or updating course material is much easier than manually re-creating entire courses on paper. "If you're teaching Shakespeare, you don't have to worry about Shakespeare becoming obsolete," Metz says. "But medical and science [information] could have a short half-life, so that when it's time to update course material, it makes sense to do so in a modular, digital form."

The beauty of the database is its flexibility, says Lee. "The model

allows you to take chunks of information, manipulate it, reuse it and put it together in a way that suits your own unique needs. I think that's what's going to be so attractive to other schools."

Dozens of universities from as far away as South Africa have visited Tufts to

see demonstrations of the system and its potential applications for medical education. The AAMC is exploring the idea of creating a national database of health sciences information, which would be available to all U.S. medical schools, based on Tufts' system. "It doesn't make any sense to have every medical school in the country replicate this," says Dr. Michael E. Whitcomb, senior vice president of the division of medical education, AAMC. "If we could develop something that all medical schools could use, it would be a tremendous advantage."

Eaton, Lee and Metz are thrilled that what began as a grassroots effort may benefit not only Tufts, but also the greater scientific community. "Part of our mission is to go beyond what we do on our campus and to make a contribution to the world," says Metz. "So we're very committed to the beginnings of a movement to use the system as a national model. It's part of what our mission is about."

Bullitt, who is in the middle of a clinical rotation in adult internal medicine this semester, continues to rely on the Health Sciences Database website for long-distance learning—and to cure any future spells of medical student amnesia. Even after she graduates in 2002, she and other Tufts graduates can continue to use the system if they are staff members at any of Tufts' affiliated institutions. One of the most important lessons she has learned at Tufts, she says, is how to use technology as a tool to continue her education—a lifelong task for medical professionals.

"That's the world we live in," she says. "You take what you've learned from your education and constantly add to it, and it's nice to build that habit now. This system isn't going to be a textbook I'm going to throw out in a couple of years because it's no longer accurate. It's always evolving." **CIO**

Senior Writer Angela Genusa never went to medical school, but frequently suffers from information-overload amnesia. If you'd like to share knowledge management strategies with her, or if you know where she last put her car keys, please let her know at agenusa@cio.com.



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of field workers

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access to critical
customer information

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Whatever to...

Past Enterprise Value Awards winners haven't
rested on their laurels ■ BY TOM FIELD

About a year ago, John Glaser was in the hospital. Not an unusual place to find the vice president and CIO of Partners HealthCare System, a Boston-based company that manages 10 Massachusetts hospitals. But this time, Glaser was there to visit his wife. She had just undergone knee surgery and lay in the recovery room, emerging from her anesthesia fog. Suddenly one of her physicians stepped into the room and introduced himself. However, before Glaser could thank him for his work, the physician thanked the CIO for his. He recognized Glaser as one of

What Happened

BRIGHAM & WOMEN'S HOSPITAL

A Speedy Recovery

THE 100
ENTERPRISE
VALUE AWARDS

Even small mistakes in patient care can have enormous consequences. So Brigham & Women's Hospital developed a computer medical order entry system to warn staff before problems happen.

BY PETER FABRIS

Brigham & Women's Hospital is one of Boston's leading teaching hospitals, a Harvard Medical School affiliate and the recipient of three Nobel prizes.

ca's doctors have 2,500 medications, 1,100 laboratory tests and 150 radiology procedures at their disposal. To master all of the subsequent treatments would "defy human cognition," says Glaser. The most experienced, conscientious and well-trained physician might order an unnecessary diagnostic test or, worse, overlook the fact that a patient is taking a medication that reacts badly with another drug. Errors can increase when doctors are dealing with infre-

quent orders. The system warns of potential adverse reactions in an average of 29 of those cases, says Glaser. Sometimes doctors decide that the benefits outweigh the risks and go ahead with the order, but about 14 of those 29 red flags result in physicians canceling an order. Some 320 of those 4,000 drug orders prompt the system to remind doctors that the patient is already receiving the medication. Doctors cancel about a third of those orders.

In addition to preventing mistakes, the system's "event engine" proactively reminds doctors and nurses to perform certain procedures based on accepted treatment schedules. For example, it might prompt nurses to make sure that a patient recovering from surgery gets out of bed three times a day. The system "constantly searches for things that ought to be done," says Dr. Thomas Lee, co-director of the hospital's Clinical Initiatives Development Program.

For example, if John Doe's blood test shows low potassium levels coupled with the presence of the medication Digoxin, the system would indicate upon receiving the test results that the patient may be at risk of heart problems.

Doctors can also enter reminders to themselves (e.g., "Check Mrs. Sweeney's mammogram results in two weeks"), and the system will automatically prompt them when they log on each day, says Lee.



The hospital's Provider Order Entry System (POES) acts as a check and balance on doctors' orders for medication and tests and warns of potential adverse reactions. POES's aim is to improve patient care, reduce health-care costs as well.

quently prescribed drugs and tests. Addi-

Past winners include (clockwise from bottom left) Black & Veatch, Brigham and Women's Hospital and SBC Communications.

ENTERPRISE VALUE THIRD WINNER

Reengineering the Engineering Business

The database Black & Veatch constructed revolves around shared data, not just drawings. And it's laying a foundation for global success.

BY TOM FIELD

TWENTY YEARS AGO, BLACK & VEATCH was a modest-sized engineering firm struggling for a piece of the domestic market. Today, the 83-year-old Kansas City, Mo.-based firm is a global force, competing with the likes of Bechtel and Fluor. A \$1.4 billion private partnership, it controls 30 percent of the domestic engineering and construction market and 14 percent of the entire international market. The key difference between yesterday and today? Black & Veatch changed the way it did business. A customer-built relational database, it gave engineers and construction managers a powerful tool to share data and gain greater competitive advantage in winning the business. As a result, Black & Veatch is now a global success.

Black & Veatch overtook hundreds of projects worldwide, including a \$1.2 billion water supply project in the Colorado Rockies and a \$1.1 billion highway interchange in the San Francisco Bay Area. The firm's success is due to its ability to share data and gain greater competitive advantage in winning the business. As a result, Black & Veatch is now a global success.

Research and Development

Black & Veatch began in 1979 as the brainchild of P. James Adams, now the chairman of the board. Then the company's chairman of the board, Thomas Lee, head of Black & Veatch's Energy Group, which designs and builds power plants, which Adams was assigned to the company. Adams was assigned to the company. Adams was assigned to the company.

Enterprise

Black & Veatch's success is due to its ability to share data and gain greater competitive advantage in winning the business. As a result, Black & Veatch is now a global success.

Value

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BY TOM FIELD

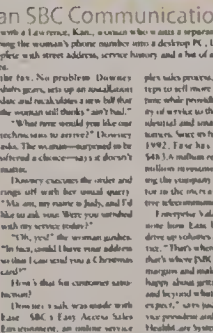
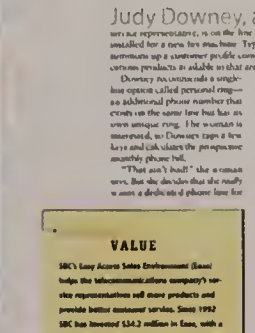
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VALUE
SBC's Easy Access Sales Enhancement (EASE) helps the telecommunications company's service representatives sell more products and provide better customer service. Since 1992 SBC has invested \$24.2 million in EASE, with a total ROI of \$483.8 million. But more than ROI, EASE gives SBC a key advantage at a time when the telecommunications business is more competitive than ever.

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612 11/20/91 194

the primary architects behind the hospital's provider order entry system (POES), an electronic check-and-balance system that warns doctors when their prescribed medications or tests might cause adverse reactions in patients (see "The Rx Files," Nov. 1, 2000). This homegrown system, first implemented at Boston's Brigham and Women's Hospital in 1993, has demonstrably improved patient care, cut health-care costs and was a 1996 Enterprise Value Awards winner. Partners is now planning to roll it out throughout their entire multihospital system. Smiling, the physician told Glaser, "I just want you to know that your system has really saved my ass a few times."

How's that for a testament to long-term value? Technologically, the Windows NT-based client/server system isn't particularly impressive—not when compared to some of today's dazzling, state-of-the-art telemedicine systems. But strategically, as a means of improving medical care, POES has no peers. "This is one of those systems that feeds on itself," Glaser says.

POES is not alone. In taking a fresh look at some of the past award winners, we found several that continue years later to bring noteworthy value to their host companies. Some, like POES, don't employ bleeding-edge technologies, but still deliver competitively differentiating results. Others, such as SBC Communications' Easy Access Sales Environment (EASE), a 1999 winner, have grown beyond their parent companies to become industry standards. Then there are those such as Black & Veatch's PowrTrak information system, a 1998 winner, which continues to evolve with emerging technologies and changing times.

Of course, as the complementary bars of emerging technologies and business-IT collaboration have been raised, some past

winners don't look so remarkable today. Take SINet (which is Schlumberger's Information Network), for instance—a 1997 Enterprise Value Awards winner. This intranet was remarkable when Schlumberger applied for the award in 1996 and unique when the global manufacturing and technology services company pioneered it in 1985. Judged on its own merits, SINet probably wouldn't win an award today—intranets are ubiquitous in business now.

judges. Glaser, who has been a judge since 1998, says he sees one consistent thread among the winners from all the represented industries: superb management. "Many of these projects haven't just changed organizations, they've changed entire industries," Glaser says. "In each of these projects you've seen people who are quite willing to be bold. They have great vision, great execution, a willingness to undertake a risky endeavor—and they pull it off."

In taking a fresh look at some of the past Enterprise Value Awards winners, we found several that continue to bring noteworthy value to their companies.

Yet, the business-IT collaboration that resulted in that system has helped SINet evolve into a business backbone that has brought Schlumberger new efficiencies, cost savings and a new network services line of business. The initial SINet success and its subsequent evolution have helped cultivate a risk-taking attitude among Schlumberger's top decision makers. "We took two or three risks at the right time, like building [SINet] on TCP/IP in 1992," says Jean Chevallier, Schlumberger's vice president of IT. "And we continue to take risks today."

And what about the people who built or sponsored these award-winning systems? Some, such as former Black & Veatch CEO Jim Adam, have retired. Others, like SBC's Mark Steinmetz, have moved on to bigger roles within their companies, in part because of their connections to these high-profile projects. And there are even a few—Glaser and State Street CIO John Fiore come to mind—who have become award

Adaptability is another common trait. The most successful award-winning systems are those that are flexible enough to meet today's needs while anticipating tomorrow's. Glaser's own POES is a good example; it was built to serve a single hospital, but it will soon serve 10 hospitals in the Partners system. This exponential scale-up wouldn't have been possible had Glaser's team built the system to serve only Brigham and Women's immediate needs in 1993.

Bottom line: The hard work doesn't end with the Enterprise Value Awards ceremony. For companies that want to achieve lasting value, the trick is to build systems that are solid enough to deliver hard results but flexible enough to adapt to technological, personnel and business changes. We caught up with three past Enterprise Value Awards winners—SBC, Black & Veatch and Partners HealthCare—to see how their award-winning systems have weathered the transition from then to now.



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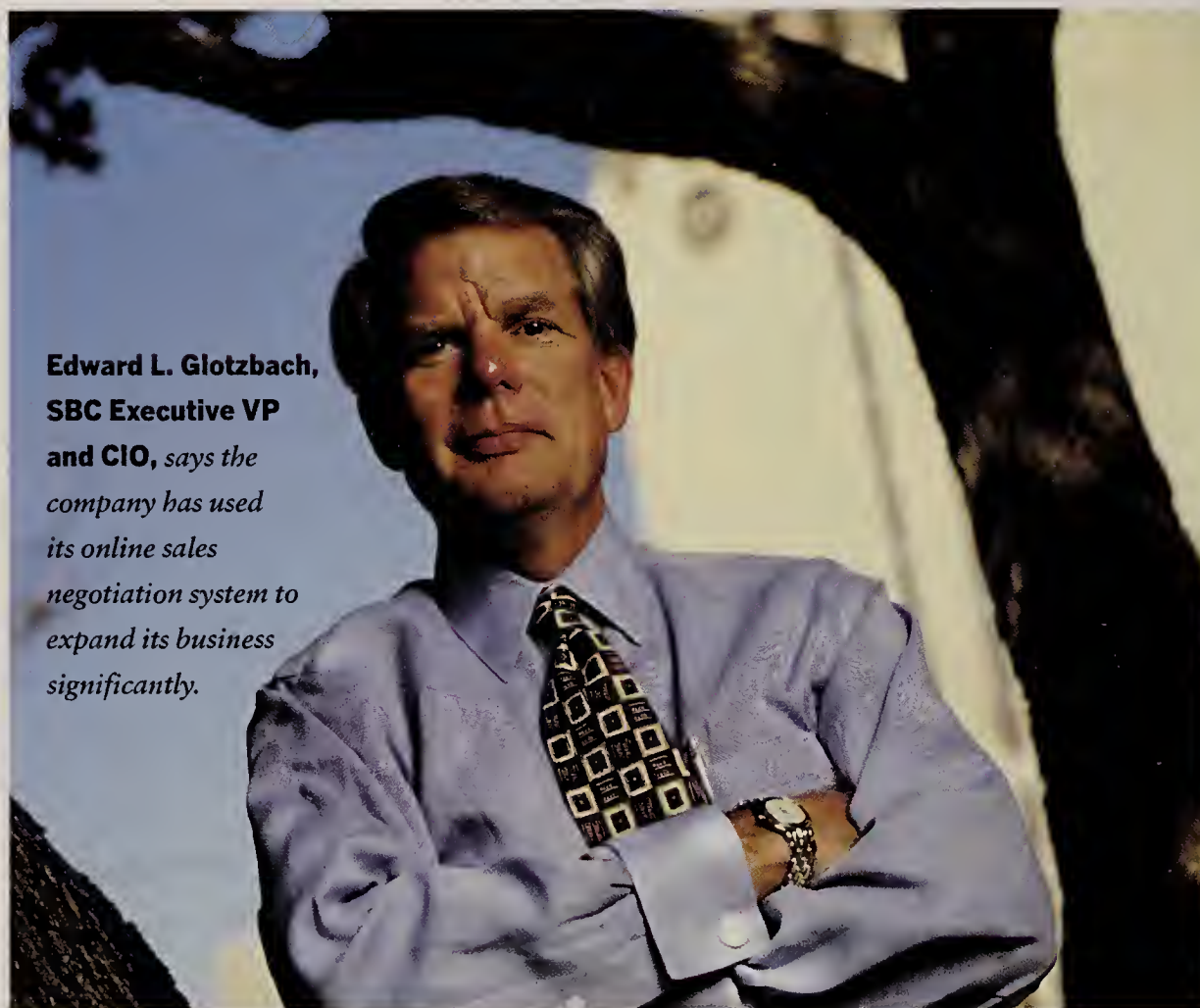


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SBC Goes Coast to Coast with EASE



Edward L. Glotzbach,
SBC Executive VP
and CIO, *says the*
company has used
its online sales
negotiation system to
expand its business
significantly.

SBC COMMUNICATIONS **1999 ENTERPRISE VALUE** **AWARDS WINNER/EASY ACCESS SALES** **ENVIRONMENT**

THEN: Online sales negotiation tool helped this Baby Bell's sales reps sell more products faster in an exclusively local telecommunications marketplace.

NOW: Last July, SBC became the second regional telephone company allowed into the long-distance marketplace, in part because of its success with EASE.

SBC WAS ALWAYS THINKING LONG—LONG distance, that is. Ever since the enactment of the Telecommunications Act of 1996, which broke the telephone company monopolies, this San Antonio-based local

exchange carrier (formerly known as Southwestern Bell) has set its sights on breaking into the lucrative long-distance market. And the way to do it was with an information system built to handle the local marketplace—with EASE.

SBC's Easy Access Sales Environment (EASE) is an online sales tool that provides data and direction to help the company's 8,500 service representatives sell more products and provide better customer service. Between 1992 and 1999, SBC invested \$34.2 million in EASE, realizing an estimated return of \$483.6 million in cost savings and increased revenue. Because service reps were able to see more products faster, SBC's volume of calls grew from 80,000 to 100,000 per day, the length of the calls was cut by an average of 2.5 minutes, and order

accuracy increased from 90 percent to 97 percent. Mark Steinmetz, then SBC's director of sales operations mechanization and an EASE project sponsor, said the system "doesn't do away with all the work involved in our process, but it really has simplified it."

That simplification ended up being a significant competitive edge. In opening up the telephone marketplace, the Federal Communications Commission sought to achieve parity by ordering local carriers such as SBC to share their basic operating systems with new competitors. At the time, SBC was the only local carrier to have a plug-and-play sales tool that could easily be shared with rivals. As a result, SBC in July 2000 became the second of the former Baby Bells to be granted entry into the long-distance marketplace.

When it won the award in 1999, SBC was primarily a regional telephone company catering to customers from St. Louis to San Antonio. Since then, SBC has acquired such rivals as Ameritech, Nevada Bell, Pacific Bell and SNET, effectively giving it a stranglehold on local phone service west of the Mississippi. "We're roughly three times the size we were then," says SBC Executive Vice President and CIO Edward L. Glotzbach. To accommodate this growth, SBC depended on EASE. Among the system's results:

With the PacBell acquisition, EASE was rolled out to 5,000 new service reps who subsequently shaved an average of 7.5 minutes off their service calls.

Since last July, when SBC was granted entry to the long-distance market, more than 1 million long-distance customers have been signed up in Texas—90 percent of them via the Easy Access Sales Environment.

"EASE has met our expectations and then some," Glotzbach says.

Today, service reps use Enhanced EASE, a GUI-based system that is easier to use, offers more information faster and flashes

Scaled to Internet Heights

Who was it that said, "Find me a mountain and I will climb it?" It must have been the folks at Apogee Networks. Quietly working behind the scenes, Apogee Networks has developed new billing technologies that will enable the Internet to scale to new heights. A solution that commercializes the asset of the Internet — Content. Identify, measure, rate and bill billions of content transactions on the Internet daily. Rapid new service creation. A flexible technology that can work with virtually any service provider: A billing solution that allows the Industry to rapidly introduce new Business and Revenue models.

Those folks at Apogee Networks. Where will they climb to next?

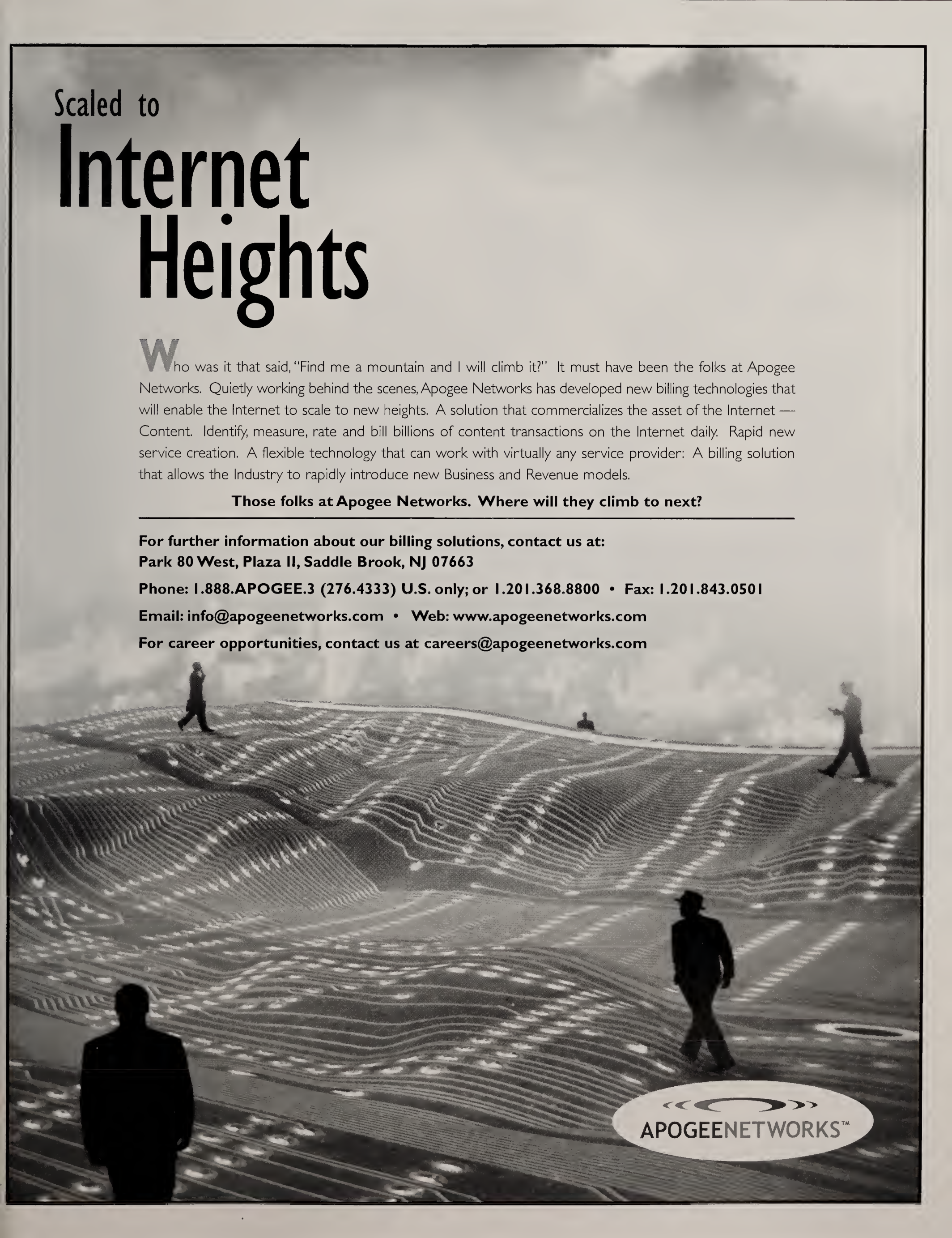
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ENTERPRISE VALUE AWARDS RETROSPECTIVE

fewer screens. With this second-generation system, service reps are seeing their calls shortened by an additional 3.5 minutes on average, says Steinmetz, who now serves as SBC's executive director of mechanization strategy. "But we're not resting," he says. "We're pushing toward a third generation of EASE, one that conducts CRM activities."

Artificial intelligence software plays a

huge role in this next iteration, allowing the system to recommend product suites to customers who have answered a few basic questions about their telecommunications needs. SBC has already piloted this system with some of its new-connection service reps in Texas, and early results include a 10 percent revenue increase.

Since its debut, other phone carriers have

imitated EASE and created similar systems. But SBC's version still delivers competitive edge, its sponsors say, because it was built not just to scale, but to meet the customers' changing, ever-increasing needs. "What matters at the end of the day," Glotzbach says, "is how you bundle your products and meet the needs of your customers as they've articulated them to you."

Powrtrak Rolls On at Black & Veatch



John Voeller, Black & Veatch CTO, *says the company's proprietary construction project database will soon move from reactive computing to proactive computing.*

BLACK & VEATCH 1998 ENTERPRISE VALUE AWARDS WINNER/POWRTRAK

THEN: This proprietary information system, built in-house by Black & Veatch's IT organization, helped the global engineering company complete projects faster, cheaper and with fewer errors than its competition, accruing an ROI of roughly \$21 million from 1983 to 1997.

NOW: Black & Veatch has licensed Powrtrak to

such companies as Taiwan Power (to the tune of \$28 million in revenues), and the IT group that built it has been spun off into its own company, Black & Veatch Solutions Group.

AS AN ENGINEERING COMPANY, KANSAS CITY, Kan.-based Black & Veatch has always tried to stay at least one step ahead of its competition. Which is why its Powrtrak information system keeps evolving.

When first introduced in 1983, at the

behest of former CEO Jim Adam (who has since retired), this construction project database ran on VAX minicomputers and did nothing but pump out raw information such as equipment and drawing lists to network clients. In 1998, when Black & Veatch won the Enterprise Value Award, Powrtrak (then in its third iteration as a client/server app) ran on a core Oracle relational database that performed eight distinct functions, including 3-D modeling and procurement control on a TCP/IP and satellite network that made information accessible to users anywhere in the world. Today, Black & Veatch engineers are at work on a fourth-generation Powrtrak, which will run entirely over the Web and be based on object-agent architecture. "People are already starting to think about a fifth-generation Powrtrak that will be decision-centric (as opposed to the current data-centric) and help engineers make construction decisions, not just record them. In other words, rather than have a system that focuses on creating images of construction projects, this next-generation Powrtrak will be focused on the various decisions—pricing, supplying, securing—that are made in a construction project. "We'll go from the reactive computing we all grew up with to proactive computing," says Black & Veatch CTO



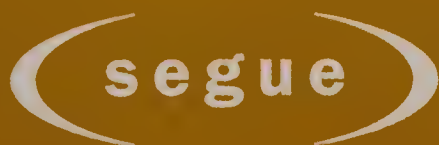
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ENTERPRISE VALUE AWARDS RETROSPECTIVE

John Voeller, who recently took on the title of chief knowledge officer.

Like Powrtrak, Black & Veatch has changed considerably since 1998. Then, the company was heavily invested in Asian projects, including the \$1.8 billion Lungmen nuclear power plant project in Taiwan. Since then, the Asian market has collapsed, and Black & Veatch has retrenched in the United States, focusing on domestic projects. In 1999, the company spun off its IT group; now called Black & Veatch Solutions Group, it is an \$80 million company selling IT services to Black & Veatch and other big-name clients.

As the business has changed, so has the nature of Black & Veatch's engineers and customers. When Powrtrak was first introduced, personal computing was a new concept to many of the company's veteran engineers, who frankly had grown up believing that data entry was secretarial work. Powrtrak had to be pushed on these people. It has been the younger, more computer-savvy engineers,

who have joined the company since, who have demanded more functionality from Powrtrak. Similarly, Powrtrak used to be considered a deal-maker when prospective customers were exposed to the system's efficiencies and cost savings. Now Powrtrak is viewed as simply part of the

stayed wedded to any one version of Powrtrak, Voeller believes the system's core concept has been proven successful. When Black & Veatch began moving to the fourth generation of Powrtrak a couple of years ago, Voeller says, "We had the chance to completely revisit the

The most successful award-winning systems are those that are flexible enough to meet today's needs while anticipating tomorrow's.

package. "It's not considered unique anymore," Voeller says. "It's just an indigenous part of our world."

Still, even as Powrtrak is now taken for granted, none of Black & Veatch's competitors has stepped forward with a better engineering information system. "I've seen attempts, but I haven't seen anyone come up with anything akin to Powrtrak," Voeller says. "Most engineering companies have enough trouble just supporting their e-mail and financial systems."

Although Black & Veatch has never

data content of the database. After 15 years of use, we changed only 5 percent of the data. That told us that if you center a system around your data, everything else can evolve, but the basic business doesn't change."

As he envisions the Powrtrak of the future, Voeller knows the system will evolve in ways that can only be imagined today. "There ain't no single right answer," he says, "but we've been able to come up with a couple of pretty good answers in the past."

HealthCare System Serves New Partners

BRIGHAM AND WOMEN'S HOSPITAL 1996 ENTERPRISE VALUE AWARDS WINNER/PROVIDER ORDER ENTRY SYSTEM

THEN: With 162 servers and 4,800 clients, this proprietary information system was considered the biggest health-care client/server system in the world.

NOW: This same system now runs on roughly 400 servers and handles 30,000 clients.

WHEN JOHN GLASER IS APPALLED, THINGS happen. Ten years ago, as the CIO of Brigham and Women's Hospital in Boston, Glaser described hospital leadership as "morally appalled" when they read a survey revealing that 6.5 percent of the hospital's patients were likely to experience an adverse reaction to wrongly diagnosed medical treatment. One-third of these reactions could have been prevented. The number was consistent with health-care indus-

try averages, but as a Harvard Medical School affiliate, Brigham and Women's aspired to be better than average. And so Glaser worked with a team of physicians and IS staff members to develop the provider order entry system (POES), a client/server tool that reduces mistakes by flagging potentially dangerous prescription orders and redundant tests. The system increased doctors' workloads—they had to take time to enter their orders in the sys-

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tem—but it dramatically reduced their errors. By 1996, on an average day, doctors were entering 4,000 medication orders in POES. Twenty-nine of those orders came back flagged for potentially bad reactions, and 320 were marked as redundant.

What types of problems does POES flag? Diagnostic tests that might mix badly with a patient's prescribed medications, duplicate orders and tests that should be conducted on a strict schedule. The system can even remind health-care providers that recovering patients need to walk around three times a day.

Today, Brigham and Women's is one of 10 hospitals managed by Partners Health-Care System, a Boston-based integrated health company; Glaser is Partners' vice

president and CIO. And POES remains the company's best check and balance on doctors' orders and patients' treatment. "The technology is a little different," Glaser says. (Then the system ran on DOS; today it runs on Windows NT.) "But the efficiency of orders has gone up substantially." At Brigham and Women's Hospital, serious medication error rates are down by 50 percent, and 3 percent of orders are changed after doctors are given POES suggestions. The architecture that supports POES hasn't changed dramatically. When first deployed in 1993, it was considered the world's largest health-care client/server system, with 4,800 clients and 162 servers. Today, it's an even larger system, with

30,000 clients and 400 servers, and developers are piloting some Web-based systems for future rollouts.

What has changed dramatically as a result of POES is the makeup of Glaser's IT organization. Ten years ago, there were no physicians in IS. But after initiating the POES project, Glaser began recruiting MDs to deepen his group's medical knowledge. Today, four of Glaser's senior managers are physicians. "We've seen an enormous revolution in telemedicine, medical imaging and electronic records," says Glaser, who attributes the success to the collaboration between the two groups. "We have a track record and trust."

Unfortunately for patients who are

Power outages interrupt operations at 72% of U.S. businesses.

SOURCE: IDC

Power disturbances account for about one third of all server failures.

SOURCE: www.ContingencyPlanning.com and Ernst & Young, 1997



John Glaser, CIO at Partners HealthCare, says that the institution's provider order entry system dramatically reduces prescription errors and redundant tests.

treated outside the Partners network, POES remains a proprietary system. Even though Partners licensed the rights to POES to Eclipsys Corp., a health-care technology vendor based in Delray Beach, Fla.,

Glaser's own research reveals that only 5 percent of hospitals nationwide have a similar system. Why so few? "These systems are hard to implement, and they can be expensive," Glaser says. In an era of

health-care cost-cutting, IT systems are often the first to go.

Even at Partners, POES hasn't yet spread from inpatient to outpatient services. And while the 10 hospitals are admitting 120,000 patients per year, they treat more than 2 million outpatients annually. Of these 2 million outpatients, as many as 40 to 50 per day are suffering adverse reactions to prescribed drugs. "That's appalling," Glaser says.

But, then, when Glaser is appalled, things happen. Stay tuned. **CIO**

How have your own best information systems weathered the test of time? Tell Executive Editor Tom Field at tfield@cio.com.

PHOTO BY FURNALD/GRAY

Today, power availability means business availability

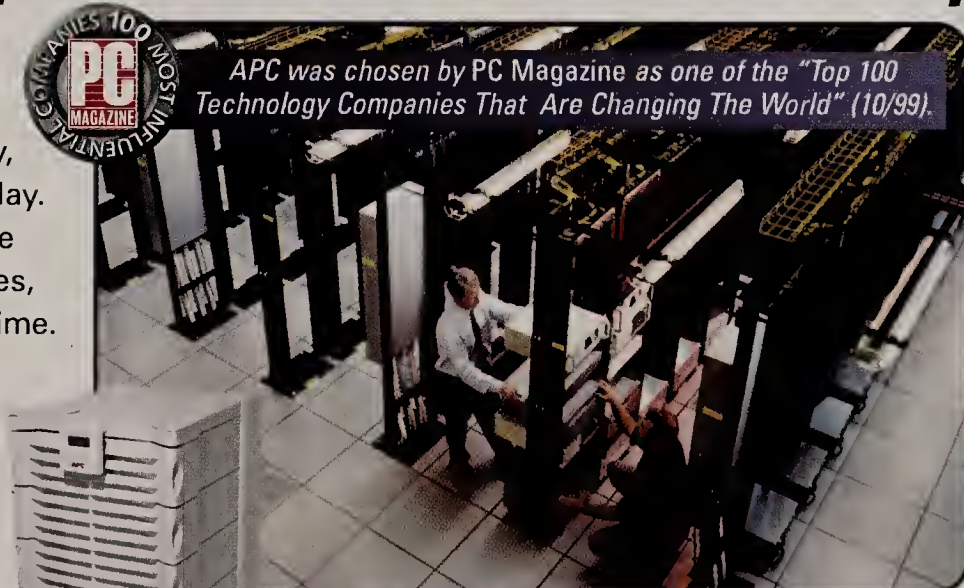
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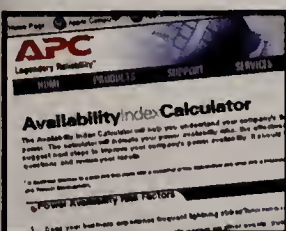


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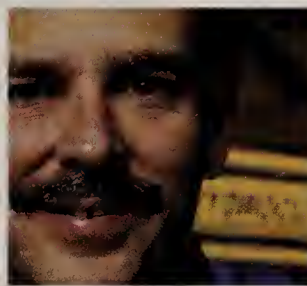
This year's honorable mentions are pointing toward the Internet's future BY STEWART DECK

On the Rise

GENERAL MOTORS



ESAB



When the judges started sorting through this year's Enterprise Value Awards entries, they were able to quickly pick the standouts—systems that changed organizations and included demonstrable ROI. ■ Two other entries attracted the judges' attention—ESAB Welding and Cutting Products and General Motors. ESAB's efforts to build new online links with its customers and GM's Web portal both earned accolades for being industry leaders, although the judges felt it was too early to judge the ROI. ■ John Glaser, one of the judges and the CIO at Partners HealthCare, says both ESAB's and GM's projects were "well-conceived experiments" designed to reveal the Internet's potential impact on their core business. "They're learning very thoughtfully in a very well-managed fashion."

Deals on Wheels

GM's website drives qualified customers to dealerships

GENERAL MOTORS

HEADQUARTERS
Detroit

CORE BUSINESS
Automotive industry

EMPLOYEES
388,000 worldwide

YEARLY SALES
\$176.6 billion

URL
www.gmbuypower.com

ED WIEZOREK WASN'T PLANNING TO BUY A new truck. His 2-year-old Dodge Dakota had only 50,000 miles on it. "I don't even think about a new truck until I've put at least 100,000 miles on," says the program manager for Daleen Technology, an Atlanta-based e-business software maker.

As a General Motors credit card holder, Wiezorek had heard of GMBuyPower.com, but he had not yet visited the site. Just for fun, he started poking around and found he could sort through the inventory of nearby GM dealers, configure a dream truck, check sticker prices and even request a best price by e-mail.

That most people don't relish the car-buying experience is not a shock to auto dealers and manufacturers. To change the process, General Motors began to use the Internet four years ago. GM had two goals: to give potential car buyers more control over their shopping experience while educating themselves about the intricacies of how modern shoppers make purchases and use the Internet as part of their car-buying process.

"Traditional manufacturers had isolated themselves behind retailers, and we thought



Dan McNicholl, GM CIO,
*set out to develop a direct
bond with customers without
offending GM's dealers.*

DRIVING FORWARD "GM is pushing things forward in the auto industry. The system is so well integrated with its business objectives that it will [eventually] demonstrate enterprise value," says Doug Barker, Enterprise Value Awards judge and the CIO and vice president at the Nature Conservancy.

"This is a well-conceived program. Their attitude was 'Let's go out and learn all we can about how the Internet might change us,'" says John Glaser, Enterprise Value Awards judge and CIO of Partners HealthCare.

PHOTO BY KEVIN MIYASAKI

I CAN'T ANSWER THAT.

I'M SORRY. I WISH I COULD HELP. LET ME REFER YOU TO A COMPANY THAT CARES ABOUT ITS CUSTOMERS.

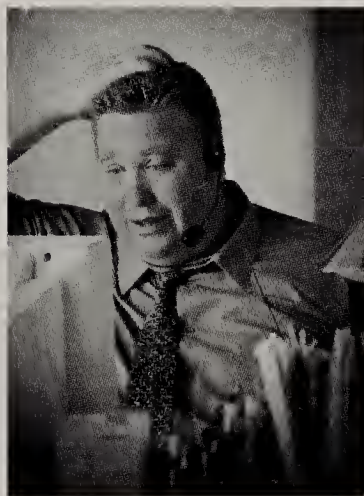
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For organizations everywhere and of every size, the implication is clear: keep your best customers 100% satisfied or risk losing them altogether.

But keeping customers completely satisfied is getting harder and harder. Customers are demanding more and more—faster delivery, broader selection, customized products and services, better value and instant response to inquiries. In other words, they want to do business on their terms, not on yours.

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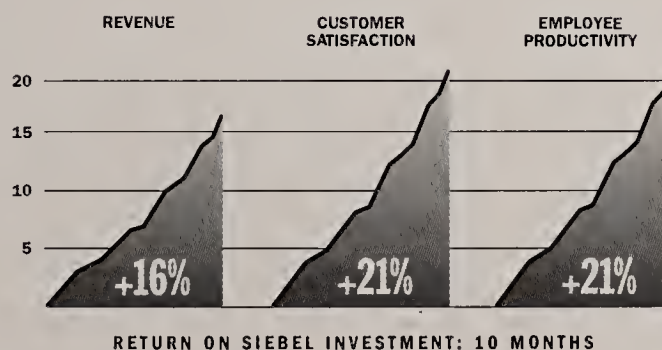
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ENTERPRISE VALUE AWARDS **HONORABLE MENTIONS**

it was important to find a way to form direct relationships with our end consumers," says Dan McNicholl, GM's CIO. While developing this direct bond, GM had to be cautious of offending its dealers or making them feel like they were being trimmed out of the process in any way.

"We showed dealers how much they'd be getting in terms of new systems with new capabilities and functionality and new customer leads, but they had to commit to the standards we required," says Ann Blakney. She is currently western director of Motors Holding (GM's dealer investment group), but she was the director responsible for the nationwide launch of GMBuyPower.com. "They had to accept a new way of selling, which included sending potential buyers an e-mail price quote. It was very dicey for a while," she says.

Joining the BuyPower program wasn't mandatory for GM dealers, but because the system so clearly demonstrated the capability to deliver better leads, GM was able to overcome some of the early grumbling and sell them on the program. Today, 88 percent of GM's more than 6,700 U.S. dealerships participate in GMBuyPower.com.

Build It and They Will Come

THE GM BUYPOWER PORTAL SITE PROVIDES customers the ability to find the exact vehicle of their choice at a nearby dealership within an online inventory of more than 1 million new cars and GM certified used vehicles.

While customers are searching through all of this data, GM is closely measuring online behavior to better understand what results in a final sale. The site precisely

Ann Blakney, western director of Motors Holding, had to convince dealers to accept a new way of selling.



UNDER THE HOOD

COST

Development and launch: \$8 million
Annual maintenance: \$5 million

HARDWARE

Sun servers running Sun Solaris

SOFTWARE

Oracle 8.05, applications developed by EDS

NETWORK

100 megabit Ethernet data network

measures dozens of actions, including time spent on each feature, how site visitors move through the site, what steps usually progress to sales quote requests and what features get the most single-hit traffic. GM has learned that visitors spend an average of 18 minutes on the site and that 83 percent of site users who click on more than one of the features contacted a dealer by e-mail or in person, generating more than 20,000 sales leads. Those BuyPower leads are a gold mine for sales.

GM spent \$8 million developing and launching the site. Function upgrades during 1999 and 2000 cost approximately \$7 million, and the price tag for annual maintenance (including weekly site modifications and hardware/software licenses and support) comes to \$5 million.

The CIO Enterprise Value Awards judges were particularly impressed with GM's effort to use the Internet to begin changing a business seemingly entrenched in an offline way of doing business and to measure every detail it could along the way. "GM is pushing things forward in the auto industry," says Doug Barker, awards judge and the CIO and vice president at the

Nature Conservancy. "The system is so well integrated with their business objectives that it will [eventually] demonstrate enterprise value."

John Glaser, awards judge and CIO of Partners HealthCare, says GM's efforts show the desire to learn what the Internet will mean to their business. "This is a well-conceived program to learn what the role of the Internet is to what they do."

Ed's New Truck

WIEZOREK ENDED UP BUYING A NEW TRUCK, of course—a 2000 Chevy S-10. "I'd always bought basic trucks: four-cylinder, manual transmission, no power anything. The S-10 is a V6 automatic with cruise control, power windows and locks, the works, but with trade-in and rebates from my GM card it came to just \$3 more per month," he says.

That satisfied customer feeling was GM's goal from the start. ■



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New Connections

Faced with a shrinking market, an old-line company went to online order tracking to keep customers happy

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NORTH AMERICAN HEADQUARTERS
Atlanta

CORE BUSINESS
Cutting and welding equipment

WORLDWIDE EMPLOYEES
7,800

YEARLY SALES
\$1.25 billion

URL
www.esab.com

MELODY WARGO REMEMBERS ALL TOO clearly how she used to spend her days: tracking orders she had placed with suppliers. Her work life changed the day one of those suppliers, ESAB Cutting and Welding, implemented a new online ordering and tracking system to better connect with its customers.

As a regional purchasing agent at Danbury, Conn.-based Praxair, one of the largest industrial gas and welding equipment distributors in North and South America, Wargo placed orders with equipment makers by phone, fax and EDI, and then spent hours tracking order status. "It could take a whole day to get an order in and confirmed," she says.

Welcome to the old economy.

ESAB Cutting and Welding, one of Praxair's primary suppliers, was a central figure in this old economy. The 96-year-old company (now a division of London-based Charter) is the world's largest manufacturer and supplier of welding and cutting equipment. The Atlanta-based company is its

Mark Shepherd,
director of IT (left),
and Dick Powell,
ESAB senior vice
president, *used the*
Internet to strengthen
customer connections.



ONLINE INNOVATION ESAB, a 96-year-old company in an old economy manufacturing industry is attempting to change the way it interacts with customers through online communication facilities.

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the girl of your dreams

the girl your mother
warned you about

a guy

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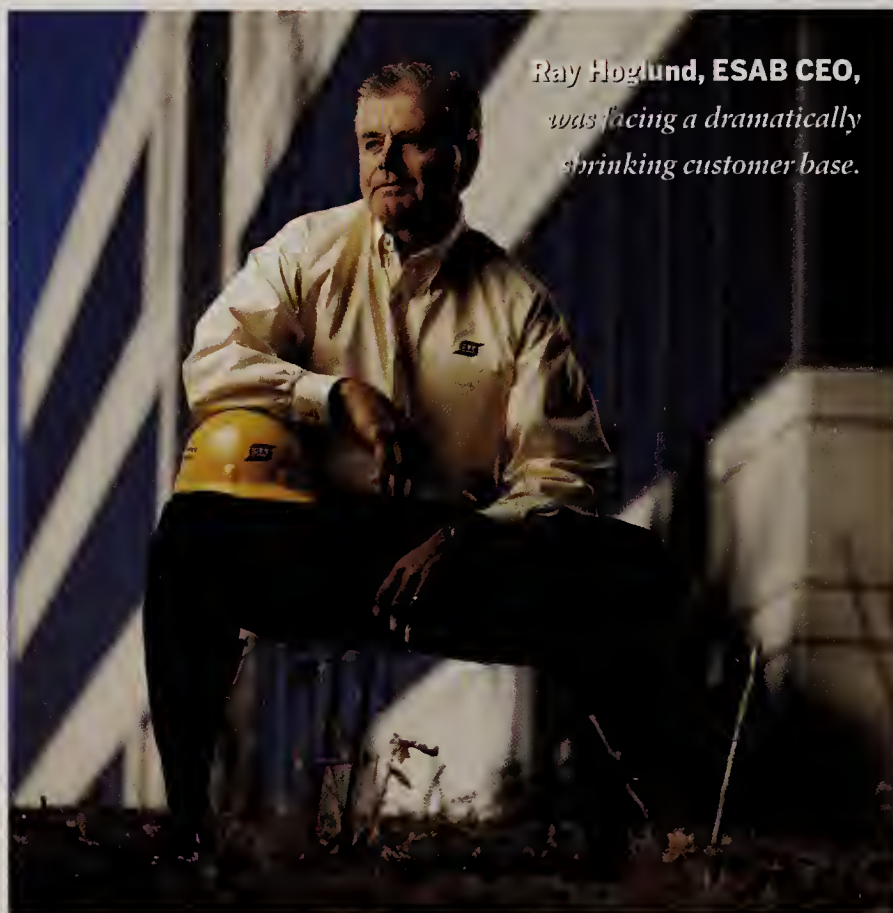
Still, ESAB faced big trouble in the late 1990s because of the way the welding manufacturing industry works. Dramatic industry consolidation reduced the number of distributors from 2,000 in 1995 to approximately 600 today. With the number of potential customers falling, competition became fiercer than ever and every lost client held the possibility of fiscal disaster for the suppliers.

"We were facing an environment that was changing and dangerous," says Ray Hoglund, CEO of ESAB. "In order to survive and be a market leader, we had to excel in either cost leadership, innovation or service. In a mature market, hyperefficiency in logistics is one of the few competitive weapons."

"Our distributors were also concerned that we had plans to use the Internet to cut them out of the sales process," says Dick Powell, an ESAB senior vice president. "So we had to show them how our plans were to provide better and stronger links between us and them, the distributors themselves, rather than trying to go around them."

ESAB set out to provide its distributor customers with a new level of customer service through a suite of e-commerce capabilities. The centerpiece of ESAB's efforts is an extranet portal called ESABonline, which lets customers look up product and pricing information, place orders, check order status and track shipments online.

ESAB's goal in spending approximately \$1.3 million on hardware, software, development and maintenance wasn't just to make its sales force happy or spread the gospel of the Internet, but to strengthen ties



Ray Hoglund, ESAB CEO, was facing a dramatically shrinking customer base.

HEAVY METAL

COST

\$1.3 million for hardware, software, development and maintenance

HARDWARE

IBM AS400

SOFTWARE

IBM DB2 and SQL7 databases, applications developed in-house

NETWORK

100 megabit Ethernet data network

with customers and add more value to those relationships than its competitors. The investment is beginning to pay off, says Mark Shepherd, ESAB's director of IT and electronic commerce. "We've seen our e-business customers buy 10 percent more annually, which is particularly beneficial since they now cost the least to serve. "Our distributors are beginning to understand the whole equation of doing business with us compared with our competitors. They're seeing that it's no longer just a matter of cheap product costs but the overall cost of

doing business that matters."

ESAB also estimates it has reduced its inventory by 21 percent since customers can better predict what they need using ESABonline. In addition, the company has been able to trim its customer service staff by 30 percent since 1997 and redeploy these workers within the company.

The CIO Enterprise Value Awards judges were impressed with ESAB's efforts to carry the welding industry into both the computer age and the Internet age. "They've caught the buzz around the Internet and are asking, 'What does this mean for us?'" says John Glaser, awards judge and CIO at Partners

HealthCare System. "They have gone out and learned about it and how it can be applied to their business in a thoughtful way.

"Their attitude was: Let's go learn, let's put something up and see how the Internet might change us. They didn't bet the farm on it because it's not clear that would be the right thing to do. It's a well-conceived experiment to understand the role of the Internet in their business," Glaser added.

For ESAB customer Wargo at Praxair, the ESABonline system has changed her life. "I use the system to check deliveries, open orders and see when back orders will approximately ship," she says. "I'm certainly more partial and more loyal to [ESAB's] product line now because it's so easy to work with them. As far as I'm concerned it's fantastic, and I'm thrilled at how it has transformed my day."

Welcome to the new economy. **CIO**

Whether it's automobiles or welding supplies, Stewart Deck loves touring manufacturing plants. Tell him your car stories at sdeck@cio.com.



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Without *B*oundaries:

THE CIO IN THE NEW WORLD

Traditional

BOUNDARIES have been redrawn or virtually erased in a new business world reshaped by the Internet, e-commerce, new technologies, global mergers and alliances. Radical change has

caused continual shifts in an already complex IT environment, altering the boundaries between countries, between cultures, between IT and the rest of the organization.

WITHOUT BOUNDARIES: THE CIO IN THE NEW WORLD explores the forces shaping this dynamic environment, and examines the resulting intersection of IT with a whole new host of legal, ethical, cultural, human resource, and business issues. We'll look at how the near and long-term future of technology will only accelerate that process. We'll explore how we can use technology to level the playing field when different countries, cultures and personnel are involved in selling and supporting products and services. We'll examine how new technologies are blurring the line between our work and personal lives – and what that means for us as employees and employers. And, because hackers and cyber terrorists recognize no boundaries, we'll look at what we can and should be doing to protect our systems, critical information – even our organizations' brands and good names.

In this turbulent new world, where irrelevancy may be a bigger risk than inefficiency, we'll need to continuously re-evaluate and reinvent – maybe even get revolutionary. And who better to lead the revolution than Gary Hamel,

the man *The Economist* calls “the world's reigning strategy guru.” MIT's Peter Senge describes him as “the most influential thinker on strategy in the Western world.” Hamel will help us cross the boundaries between old and new ways of thinking about strategy innovation, wealth creation, and the very process of continuous reinvention. He'll deliver Tuesday afternoon's keynote address, and will be on hand afterwards during a networking reception. Conference participants will receive a signed copy of Hamel's newest book, appropriately titled *Leading The Revolution*, which recently headed Amazon.com's chart of top business tomes.

CIO Magazine's Venture OnStage session will once again bring five visionaries to talk about what their new technologies, products or services can do for CIOs.

Our continuing series of dialogues with The US Department of Commerce's Critical Infrastructure Assurance Office (CIAO) will explore what business leaders, CIOs, and government agencies can and should be doing to protect ourselves.

A panel of international emerging market CIOs, in conjunction with the Global IT Knowledge Forum, will discuss how we can work together to lessen the digital divide between the technological have and have-nots.

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For more information, please see page 96A.

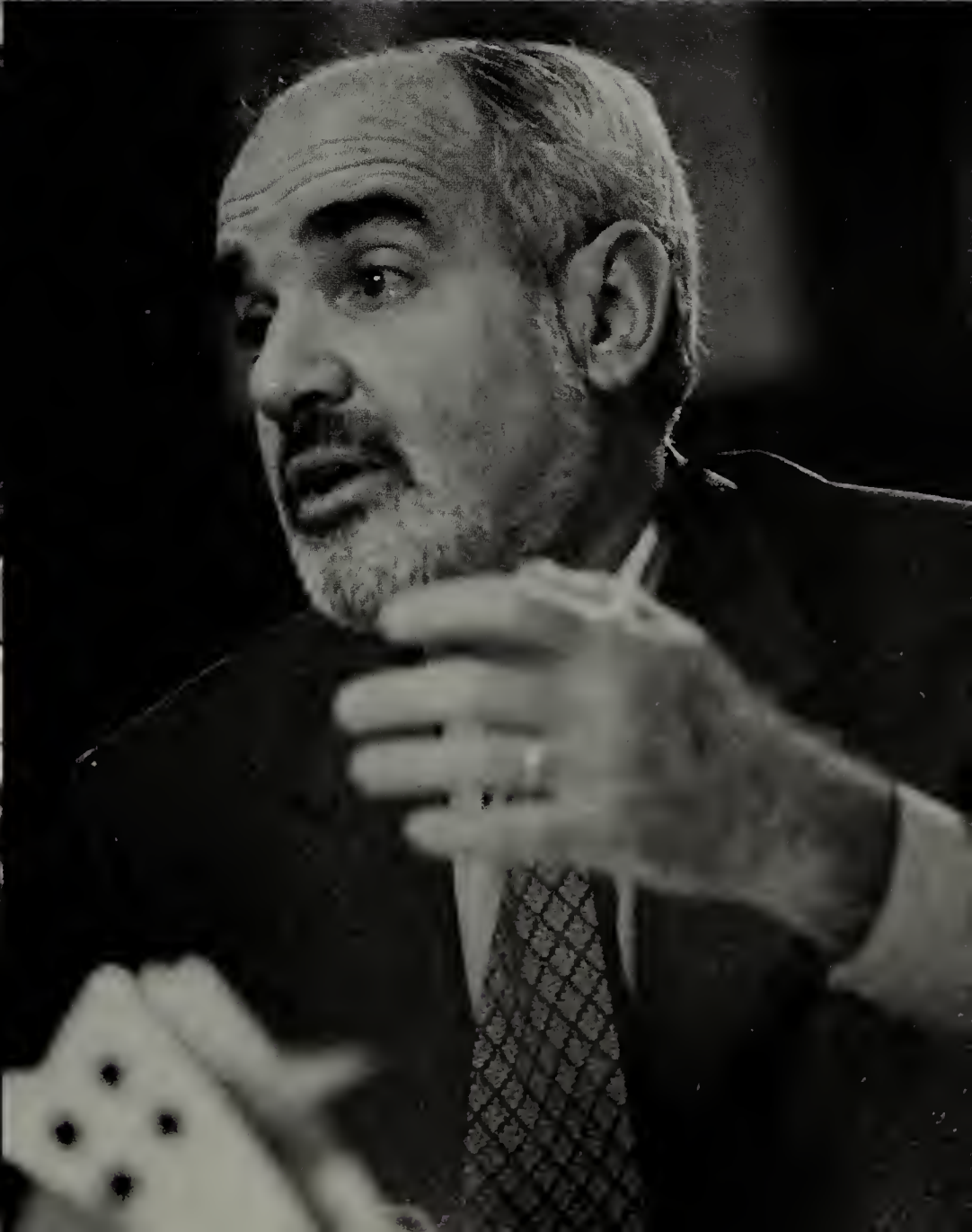
Getting Tough

Enterprise Value Awards judges and review board members meticulously measured the value of this year's winners

The cream of the crop rose quickly this year. In the first round of voting for this year's Enterprise Value Awards, the clear winners emerged right away. As the panel's attention turned to the remaining candidates, the debate began in earnest. ■ The obvious winners had set a high standard. Would the other finalists measure up? One posted a strong financial return on investment, but its benefits had accrued

GREAT MINDS Clockwise from top left: Patricia Wallington; Judges Panel: Doug Barker, Peter Solvik, Wallington, John Glaser, Gregor Bailar; John Storck, Final round of the judging process.

BY ELANA VARON ■ PHOTOGRAPHY BY WEBB CHAPPELL



ENTERPRISE VALUE AWARDS THE PROCESS

only internally. Another was innovative but hadn't yet achieved its promise. Then, minutes into the hour-long debate came the critical question that defined this year's honorees: "Do we want to say the winning system really needs to be creating value in a strategic way?" asked Peter Solvik, senior vice president and CIO of Cisco Systems in San Jose, Calif. "We're pretty much saying it has to be strategic."

Solvik was one of five independent judges, all current and former CIOs, who determined the award winners. His conclusion speaks volumes about the impact that information technology has on business today. So fundamental is IT to a company's success that when we recognize systems that are "the best of the best," in the words of judge Patricia Wallington, a former CIO of Xerox, they are those that enable a company to reach new heights.

Identifying these leading examples of IT excellence is no easy task. The final judging session, held last October in Boston's historic Faneuil Hall, is the culmination of a four-month process of reading applications, validating the finalists' claims and choosing winners.

Beginning in June, CIO editors, along with a review board of seven IT practitioners and consultants, reviewed nearly 3 dozen entries from companies in a wide range of industries. After several weeks, the group had winnowed the field to 11 finalists. Applicants made this first cut if they met the basic entry criteria. Their system had to have been deployed for at least two years, and they had to demonstrate its benefits for the entire enterprise.

Throughout the summer, review board members and editors crisscrossed the country, visiting the finalists to see how they used the nominated systems. The review board grilled business users about the value the systems brought to their organizations and pressed executives to justify the results they claimed on their applications.

When it came time for the final judging, the review board members gave presentations about the finalists they visited, adding details about the systems and their impact. One of the judges, Gregor Bailar, CIO and senior vice president of the National Association of Securities Dealers in Trumbull, Conn., says the site visits validated whether entrants have told the truth in their applications and ensured projects weren't evaluated "in a vacuum."

Review board members "really push the applicant to take a hard look at what they've come up with to express the value [of their

system] to the business," says Richard Swanborg, founder and president of Boston-based research group ICEX and Enterprise Value Awards cochair (with CIO Editor-in-Chief Abbie Lundberg).

Because the review board takes a detailed look at how IT creates value, they have helped the judges hone the criteria used to make their decisions. "They give feedback on how criteria should change," says Swanborg, as the contribution of IT evolves.

The judges made their choices—three winners and two honorable mentions. In doing so, they drew on the evidence presented to them and their own experiences delivering value through IT. While the core criteria on which the judges assessed the finalists (see "What Makes a Winner?" Page 140) was similar to that of previous years,



The Review Board

Jim McGee, Partner, Diamond Technology Partners;
Mary Silva Doctor, Executive Director, ICEX; Sheila J. Smith, Managing Partner, Omega Point Consulting; John Storck, Professor, Boston University; Virginia Reck, Executive Vice President, Kendall Consulting Group; Madeline Weiss, President, Weiss Associates Inc., and Richard Swanborg, President, ICEX, 2001 Enterprise Value Awards cochair.

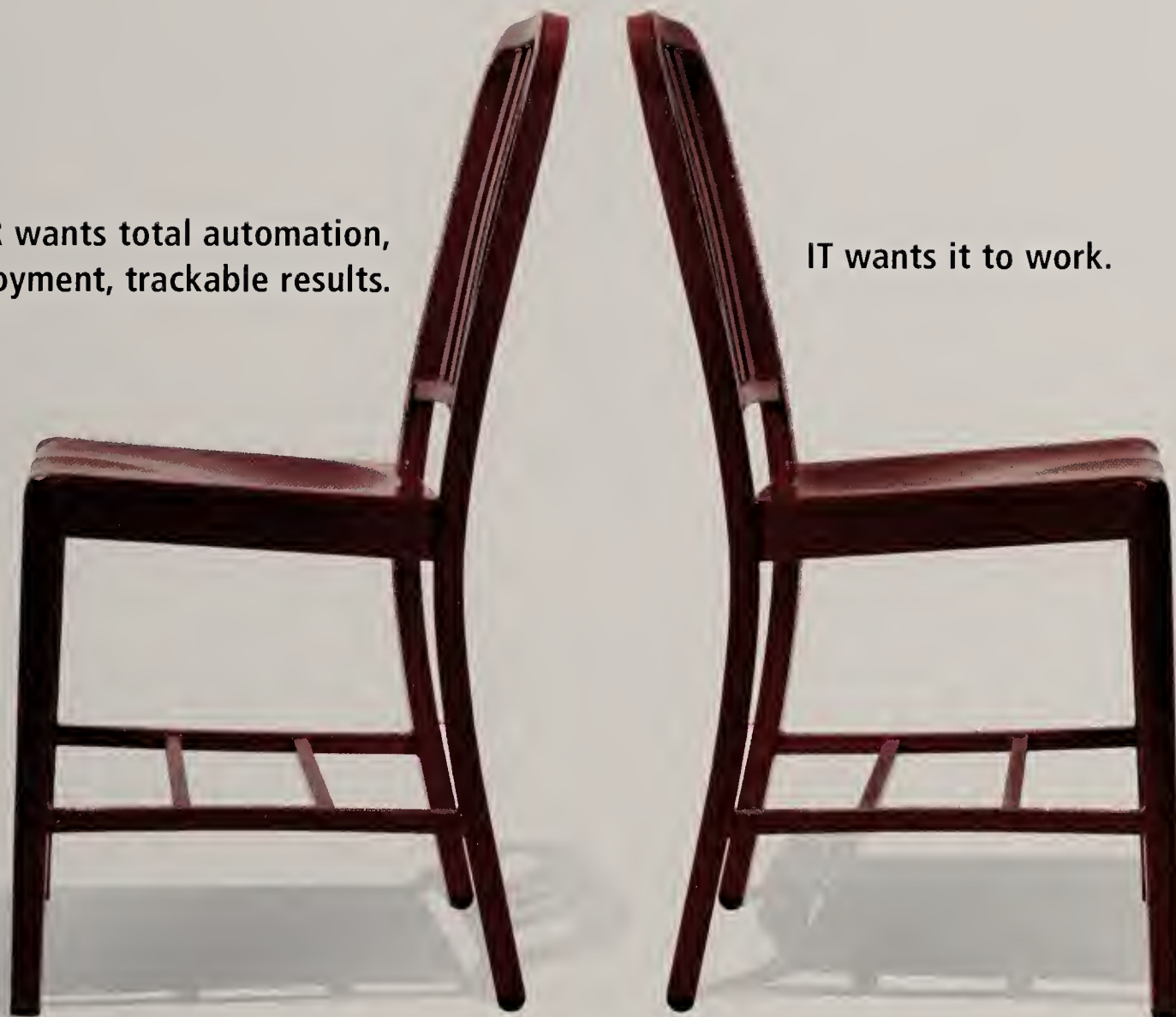
the level of value the applicants had to demonstrate reflected current thinking about what IT excellence means.

The winners had to at least equal, if not surpass, the accomplishments of past victors. What is defined one year as exemplary soon becomes a model to emulate and quickly thereafter becomes the norm. So with each round of awards, the bar for future applicants is set a little higher. "The point of the award is to acknowledge excellence," says judge John Glaser, vice president and CIO of the Boston-based Partners HealthCare System. "It ought to say that if you want to be around over time, you'd better get [to where the winners are]. Raising the bar is good because it is where the bar [should be]." ■

Application forms for the 2002 CIO Enterprise Value Awards will be in future issues of CIO and on our website at www.cio.com/eva. Deadline for entry is June 15. For more information, contact Special Projects Assistant Tina Sousa at 508 935-4630 or via e-mail at csousa@cio.com.

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What Makes a Winner?

This year's Enterprise Value Awards judges describe the factors that determined the course of their decisions

imagination



JOHN GLASER, vice president and CIO, Partners HealthCare System

"[They had] very thoughtful, insightful and very imaginative understandings of not only where they are today but also where they want to be in the future."

strategic impact



DOUG BARKER, vice president and CIO, The Nature Conservancy

"In all cases, IT was part of an integrated business strategy."

innovation



PATRICIA WALLINGTON, president, CIO Associates, and former CIO of Xerox

"They were first in their industries to try something."

results



PETER SOLVIK, senior vice president and CIO, Cisco Systems

"You have to show linkage between what business result the technology capability enabled and the connection of that result to the success of the company."

transformation



GREGOR BAILAR, CIO and senior vice president, National Association of Securities Dealers

"There's a fundamental change in the way their industries are working because of what they've done."

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They Want Your Body

Biometrics promises more security—if you'll pardon the intrusion

BY JOHN EDWARDS

ONCE THE STUFF found only in James Bond movies, biometrics—identification technologies based on biological features—is rapidly moving into the mainstream to help prevent unauthorized access to ATMs, computers, buildings and other important assets. Propelled by cheaper and better software and hardware, as well as enhanc-

ing security and eliminating pesky passwords, biometrics, many experts believe, will become increasingly popular during the next few years. "PINs and passwords can be lost, but it's hard to misplace your hands, face or eyes," says James Wayman, director emeritus of the U.S. National Biometrics Test Center and a biometrics re-

Edited by Christopher Lindquist. Send your thoughts and ideas for future columns to et@cio.com.

biometrics...broadband...wireless LANs

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searcher at San Jose State University in San Jose, Calif.

The biometrics market has skyrocketed, rising from just \$6.6 million in 1990 to \$63 million in 1999, according to Wayman. During the same time span, the average unit cost for biometrics devices dropped from more than \$5,000 to less than \$600. But as biometrics gain momentum, many CIOs still wonder which of the major technologies—fingerprint, iris or facial recognition—

a Guilford, Conn., police officer) reanalyzes questionable matches.

The program, which launched in 1996, has saved taxpayers approximately \$23 million in its first three years of operation, says David Mintie, the project's program manager.

The Eyes Have It

Although fingerprint scanning is cheap and generally accurate, it's not as foolproof as

Some CIOs worry about how much of a trade-off between security and personal privacy people will be willing to accept.

is best. Others worry about how much of a trade-off between security and personal privacy people will be willing to accept.

Fingering Cheats

Fingerprint readers are the most widely used and least expensive biometrics technology. Complete systems can cost less than \$100, says Martin Reynolds, a vice president and research fellow at Gartner Dataquest, a technology market research company in San Jose, Calif. "They're also reliable and very rugged," he adds. The units are so reliable, in fact, that they will accurately match fingerprints even when a user gains weight or ages.

In Connecticut, fingerprint scanning already helps the state government snare welfare cheats. The Connecticut Department of Social Services uses a Polaroid identification system that creates digital fingerprint images of welfare recipients. While the system records and matches the fingerprints (to determine whether an individual may already be receiving benefits under another identity), the operator photographs the applicant and records the person's signature. The matching process takes less than five minutes, after which the applicant receives a photo ID card. To safeguard against false readings, a fingerprint expert (in this case,

some other biometric technologies. According to Reynolds, various types of fingerprint reproductions (latex moldings, for one) have fooled readers in the past. That loophole could pose a big problem for banks, government agencies and other organizations that require ironclad security, he notes.

Then there's the performance problem. Fingerprint recognition technology can bog down when connected to a massive database. Leisurely performance usually isn't a problem for small businesses or government agencies with captive clients. But for organizations with large databases and significant customer service commitments, fingerprint scanning is often too slow. But other technologies purport to be far faster. Bill Voltmer, president and CEO of Iridian Technologies, a Marlton, N.J.-based biometrics vendor that specializes in iris recognition technology, estimates that an iris recognition system can sort through 100,000 records in two or three seconds, while claiming that a fingerprint system would require at least 15 minutes to perform the same task.

When scanned for identification, the iris serves as a kind of human bar code—a unique pattern of connective tissue and other features. In the entire human population, no two irises are alike, even

new products

Well Formed

ScanSoft has recently released a tool intended to let developers quickly place electronic forms into their applications. **OmniForm Developer's Edition 4.05** provides graphical form design tools as well as a paper form conversion feature that lets developers scan in an existing paper form for automatic conversion into an electronic form. Forms can include digital signature fields, eliminating the need for printouts and manual signing. The forms can also be intelligent, with self-calculating fields and drop-down menus. Developers can then add the forms to applications or web-pages through an included ActiveX control. The package has a list price of \$1,495. Customers who wish to redistribute the ActiveX control with an application can contact ScanSoft for licensing costs. For more information, visit www.scansoft.com or call 831 423-5312.

Learn XML Online

IT professionals interested in exploring the world of XML have a new online learning center. **XMLSolutions Corp.** recently started classes at XMLClassroom.com, an interactive learning site dedicated to enhancing XML skills. The site's initial course prepares students for IBM's Test

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between identical twins.

Customer convenience, enhanced security and rapid verification convinced Houston's Bank United to test Iridian technology in its next generation ATMs (a recent acquisition by Seattle-based Washington Mutual may change those plans). "We wanted to use this technology to replace both the ATM card and PIN number," says Ron Coben, Bank United's executive vice president for community banking. Bank United has operated its "EyeTMs" in Houston, Dallas and Fort Worth, Texas, since 1999. "We have learned that iris recognition is consumer-friendly and easy to use," says Coben.

Iris recognition's biggest disadvantage has been its high cost. But prices have fallen dramatically during the past few years. Iridian, for example, recently introduced a low-end iris recognition product, Authentecam, which will sell for \$299 as a single unit. Regardless of cost, iris recognition offers an important intangible benefit, says San Jose State's Wayman. "Many people associate fingerprinting with criminal activity." Iris recognition is a hands-off technology that works at distances of up to several feet and is less intrusive than fingerprint scanning. "It's much more readily accepted by users," he says.

Face-Off

Facial recognition is another biometrics technology that's widely considered nonintrusive. It's so passive, in fact, that the systems can scan people without their knowledge. Gartner Dataquest's Reynolds notes that many casinos, and even some police departments, use a combination of security cameras and facial recognition software to match faces against databases of known troublemakers.

Facial recognition works by isolating human faces in still pictures and measuring an array of facial characteristics, such as the geometry of a person's eyes, mouth and nose. Using a proprietary algorithm, the system compares the image to database-stored photos for probability-ranked matches.

And certain facial aspects don't change, even with age or weight fluctuations.

Besides spotting potential pests, facial recognition can also provide access verification. San Francisco-based InnoVentry uses technology from Jersey City, N.J.-based Visionics in its cash management machines, which reside in supermarkets, convenience stores and other retail outlets in 20 states. To protect against fraud, the system snaps a picture of each user and compares the image to a database of about 800,000 customers. The process takes approximately four minutes on the user's first session and about 90 seconds on return visits.

Although generally satisfied with the technology's performance, Frank Petro, InnoVentry's chairman and CEO, admits that being an early adopter has presented some challenges. "We had to figure out a way to get people to look at the camera properly," he says. Light control also proved to be a problem, since too much light entering the camera lens can reduce recognition accuracy. "But you learn how to control these things by creating better user instructions and positioning units more carefully," says Petro.

Like other biometric technologies, facial recognition system prices have fallen rapidly. Visionics estimates that a bank can add the capability for less than 10 cents per transaction. In a corporate setting, costs range from about \$50 to \$70 per seat.

Brave New World

As biometrics products become simpler and cheaper, the technology has begun to turn up in a number of places including PC keyboards, notebook computers and mobile phones. Acer America, for example, has incorporated a fingerprint reader into its TravelMate 739TLV notebook. "The technology is designed to prevent thieves from accessing critical data," says Arif Maskatia, Acer's vice president for advanced technology. The device could also verify a user's identity for online purchases, although no Web shopping service currently supports the technology. For notebook users who

new products

140, XML and related technologies. Modules include an introduction to XML, creating XML documents, information modeling, transformation and rendering, and programming XML. The course is available for \$250. Corporate discounts are available. For more information, visit www.xmlclassroom.com or call 703 506-1111.

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wish to retrofit their systems, Compaq Computer Corp. recently introduced a fingerprint reader that works on any Windows notebook with a PC card slot.

Facial recognition technology may also be headed into the mainstream. Visionics already offers a Pocket PC/CE version of its FaceIt facial recognition technology. The software works on a variety of handheld devices, including Casio's Cassiopeia, Hewlett-Packard's Jornada, and Microsoft's MiPad, which all feature built-in or attachable video cameras. The next generation of camera-fitted mobile phones could take advantage of similar software.

Voice recognition, long touted as a convenient, nonintrusive security technology, could also come of age in the next three to four years, predicts Patti Cloar, a senior industry analyst with Business Communications Co., a technology research company in Norwalk, Conn. "Right now, the software isn't refined enough. Background noise and hoarse voices can affect reliability and accuracy." But rapid advancements are being made in speech algorithms and related technologies. "People feel very comfortable using their voice," says Cloar. "There will probably be very little user resistance to voice systems."

While many industry observers believe that people will gladly swap their passwords and PINs for biometric access, the growing availability of advanced security technology has some people worried. San Jose State's Wayman, for instance, wonders where biometrics is leading us. "On one hand, you have these great tools for computer security and user authentication, which will enhance user privacy, but on the other you have systems that can spy on people without their permission," he says. "It's certainly a new world we're entering. What we don't know is what sort of world it will be." ■

John Edwards is a technology writer based near Phoenix. You can contact him at jedwards@john-edwards.com. Research assistance provided by Eve Keiser.

PREDICTIONS

wireless networks

Cable-free LANs bring new decisions

IT'S THE WIRELESS AGE. Prices continue to drop on the latest IEEE 802.11b-compatible wireless LAN devices. And new HiperLAN 20Mbps products are just over the horizon. Given these facts, it's easy to understand how the temptation to move to a cable-free network will increase in the coming year. But corporations need to take a deep breath and look at all sides of the technologies before they begin their wireless rollouts, says Stan Schatt, vice president for networking and communications at the Cambridge, Mass.-based Giga Information Group.

Companies need not avoid wireless LAN technologies completely, Schatt says, but they should be cautious, especially when considering the devices for mission-critical applications. For instance, he cautions, while 802.11b may claim 11Mbps speeds, its actual throughput is more likely barely half that. "And if someone is sending large documents, you can tie up pretty much all the bandwidth," he notes.

And, he adds, guaranteeing quality of service (QoS) over wireless connections is a task still in its infancy. QoS tools on today's wireless hardware are often crude or nonexistent.

Then there are other issues, such as security. While you can use 128-bit encryption on your wireless channels, doing so creates a performance hit. "And there's always the threat of interference," Schatt says, from other wireless networks in the same building, cell phones—or even microwave ovens. (Dedicated disrupters of the industrial sabotage type may even be able to fashion simple devices that could disable entire networks.) And 5Ghz devices that will avoid some common interference issues are still a couple years off.

Still, Schatt says, there are good places for wireless solutions now. Mobile populations, such as sales teams, could carry wireless connections and attach to resources in different offices quickly and easily. Other possibilities include nursing stations and warehouses where employees want constant network access with the freedom to move where their jobs take them. And in offices where it may be difficult or impossible to disrupt walls (such as sites that still contain asbestos), wireless provides a low-impact networking solution that makes old cable technologies look obsolete.

—Christopher Lindquist



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Never Fast Enough

*High-speed access has become the norm—
for a reason we never imagined* BY FRED HAPGOOD

EVERY BUSINESS has its contradictions; ours is the tension between the unbridled optimism of innovators and the bone-deep, hard-earned conservatism of professional IS managers. These men and women have not only seen it all, they have seen it all break. They believe to their core that Murphy's Law is far more fundamental to the workings of the universe than anything Einstein thought up and that a bird in the hand is worth not two but 20, maybe even 30, in the bush.

For some reason this tension seems especially acute around bandwidth. On the one hand you have the disciples of futurist George Gilder who believe that vast amounts of low-cost bandwidth will redeem sins and secure salvation. On the other hand, managers who understand that even if the bandwidth resource itself were free—which it never is—making it accessi-

ble throughout the enterprise can be very pricey and complicated. As a network technology, more bandwidth attracts new constituencies and new applications, both of which can be counted on to spin off new glitches, incompatibilities, complaints, security vulnerabilities and downtime risks. And the more bandwidth a company has, the more important the network becomes and the lower corporate tolerance falls for any kind of perceived performance degradation.

As a result, bandwidth technologies have usually been deployed slowly and carefully.

So in 1992, when *CIO* announced it was "time to embark on a far-reaching transformation of your company's communications infrastructure," we understood the sentiment would be received with a feeling of dread. In our defense, we thought we saw a looming wave of band-

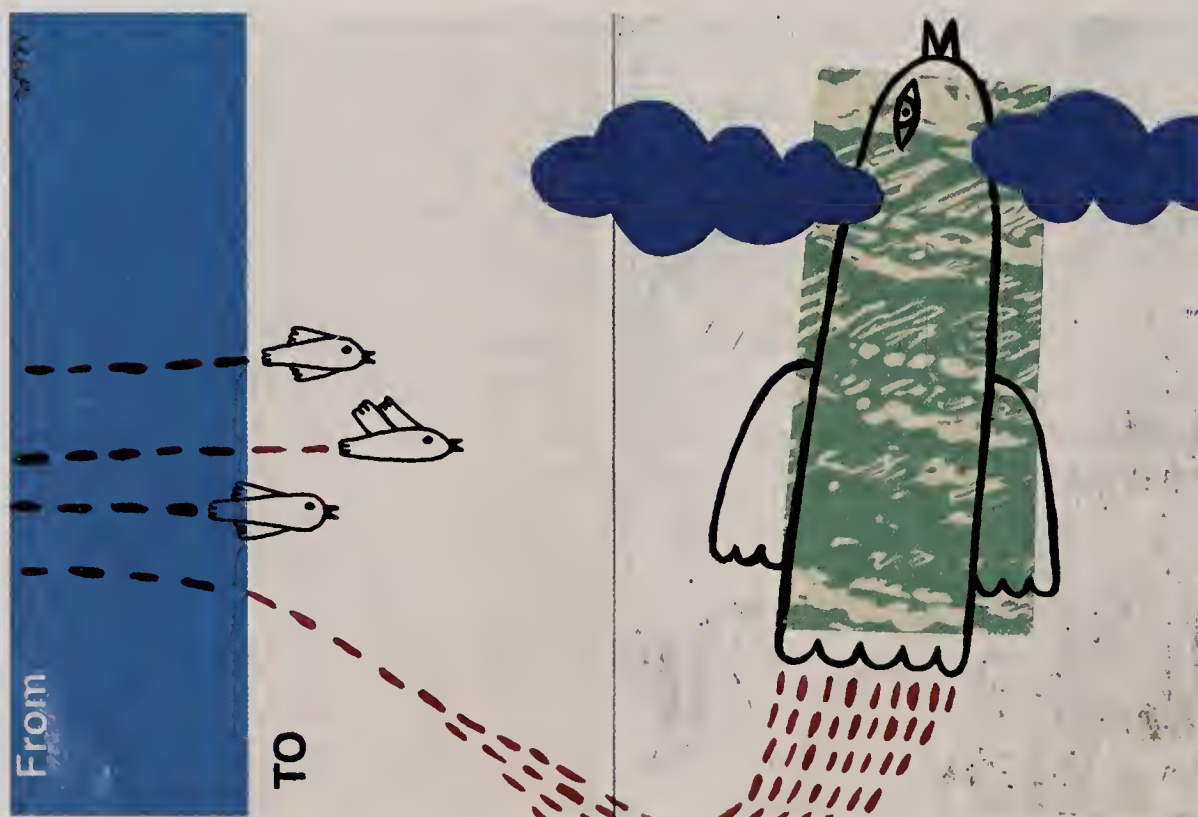
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width-hungry apps: videoconferencing, high-quality multimedia, collaboration, LAN-to-LAN connectivity and networked supercomputing. With so many baubles within reach, surely even the most cautious IS manager would buy some of them.

In reality none of these applications have (as yet) proved to be anymore than niche markets (with the possible exception of inter-LAN connectivity). This is not because the basic software was unavailable: It was in the stores, or nearly there, when we wrote the article. Enterprises and IS managers just decided that the advantages did not outweigh the costs in training, disruption, dollars and risk.

The “far-reaching transformation” that we predicted happened anyway, though

than those that merely save it. Another reason is that, for all its diversity, the Internet is highly standardized—HTML, SMTP, HTTP—and those standards have penetrated deeply into the population. Employees come to the Internet knowing what to expect and how to navigate it. The Internet is also reasonably compatible with most internal computing environments, especially as more and more companies begin to build their own networks around Internet protocols.

Finally, the broadband applications we envisioned were narrowly defined; they assumed private connections and leased lines. They ran point to point. The Internet is more like a door that opens to several environments at once, including

Applications that make money get more appreciation than those that save money.

for unrelated reasons. *Fortune* magazine recently suggested that “starting with the first serious deployments of fast online access a couple of years ago and projecting to the completion of next-generation wireless networks,” investments in broadband will soon go over a trillion dollars. Observers in the field are also noticing the uptick: “I have customers who have gone from OC3 to OC192, all in a single year,” says Bill Wadley, executive vice president of Lynx Telecommunications, a Fort Lauderdale, Fla.-based telecom consultancy and sales agent for BellSouth. (That is, from 135 megabits to 8.6 gigabits.)

The difference is, of course, the Internet—an application that didn’t even make our list in 1992. At the time, we didn’t notice that the Internet has several traits that make it an appealing motivation to buy more bandwidth. One reason is e-commerce: The Internet can contribute directly to revenues (or so the theory goes), and as every manager knows, applications that make money get more appreciation

development, procurement, marketing and outsourcing. A single bandwidth upgrade buys improved access to all those corporate functions simultaneously.

Perhaps the biggest difference between the apps we saw and the one we didn’t is that the Internet addresses all constituencies. It delivers standardization, revenues, internal economies, compatibility, cheaper training costs and comprehensive functions that run throughout the enterprise. With such a bag of goodies within reach, it is easy to see why IT managers would be willing to risk undertaking a “far-reaching transformation” of their company’s networking architecture.

It’s not so obvious that they would have been willing to jump in the pool for much less. The lesson we get from the history of bandwidth is that IS managers have what physicists call sticking—as opposed to rolling—friction. Once they decide to tear the old system out, they will keep going to the last port. But the first port isn’t going to disappear for just any pretty face. ■

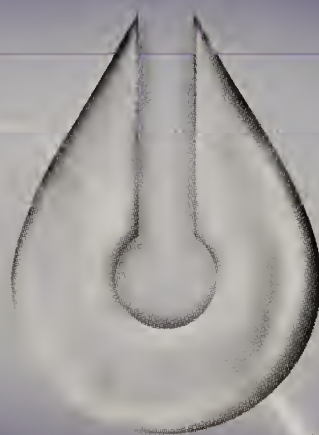
new products

version control and annotations. Customers can also invite unregistered people to view files for a specific time period. Full-text and optical character recognition search features let users find the files they need. New customers can take advantage of a 30-day free trial. Pricing begins at \$25 per month for a 500-plus user-installed base or \$27 per month per organization for 1GB to 10GB of storage. For more information, visit www.paperfly.com or call 866 727-3735.

Traveling Tape

Seagate Technology in Costa Mesa, Calif., recently unveiled a portable, universal serial bus version of its **TapeStor Travan** drive aimed at users who need reliable backup for mobile systems. The Travan Portable USB comes in either 8GB or 20GB versions with compressed backup speeds of 70MB and 85MB per minute, respectively. The drives also include Dantz Development Retrospect Backup Express and Veritas Backup Exec Desktop software. The drives support Windows 98 and 2000 as well as Mac OS 8.6 and above. The drives cost \$359 for the 8GB version and \$405 for the 20GB version. For more information, visit www.seagate.com or call 714 641-2500.

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lifescience

WORK, PLAY AND OTHER STUFF

EDITED BY SARA SHAY AND LAFE LOW



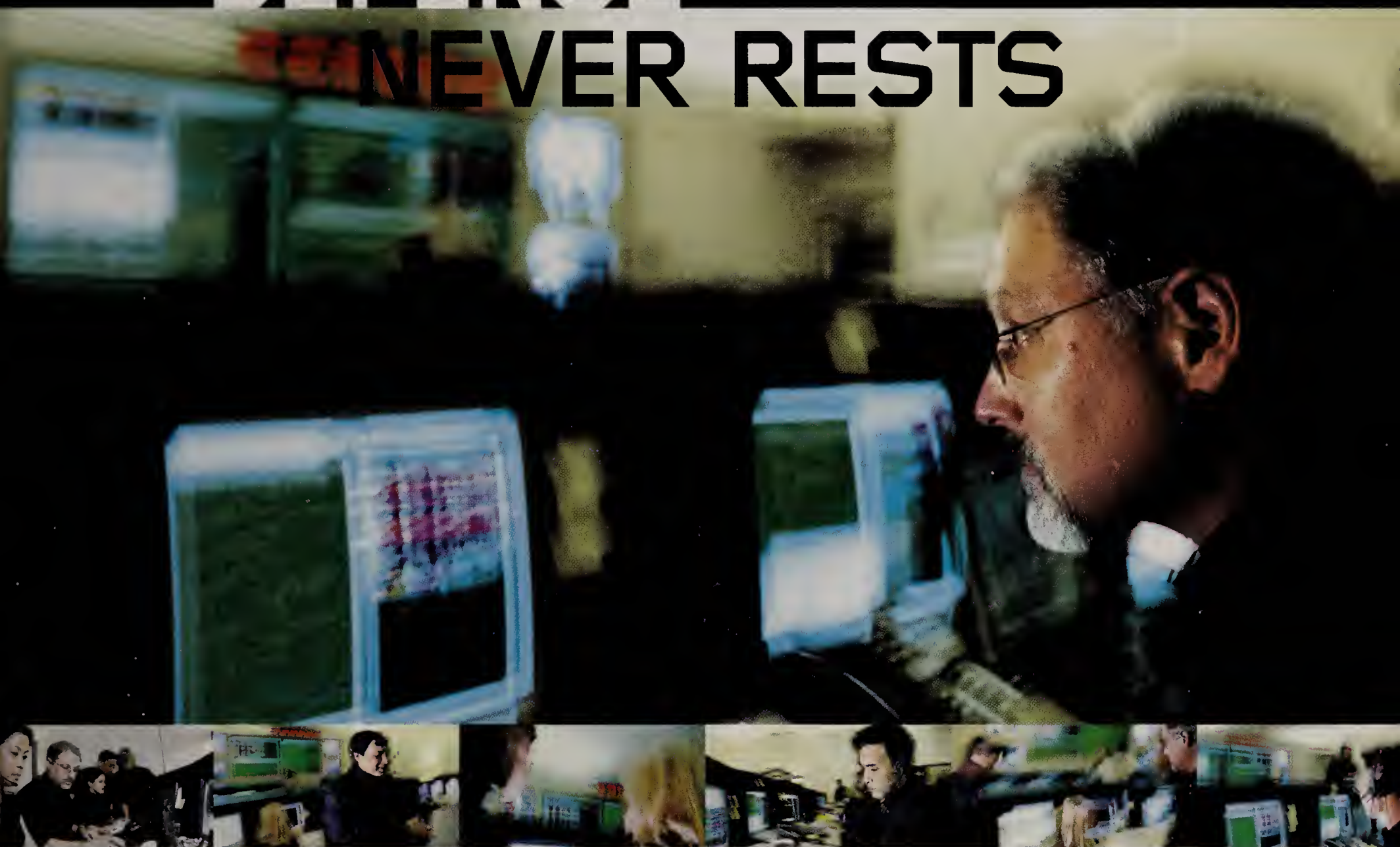
Reliable Sources The press, including *CIO*, loves smart, articulate experts who can help them do their jobs better. Here's how to become one. **BY JEFFREY L. SEGLIN**

"TO BE A GOOD SOURCE for somebody means making it as easy as I can for the reporter to do his job," says Mark MacIntyre, a public affairs specialist for the U.S. Environmental Protection Agency in Seattle. MacIntyre is not entirely selfless: "The easier I make it for a reporter to package information so that it's accessible to his readers, the more likely he's going to come back to me."

Say your goal is to fashion yourself as an authority, a go-to

source when the media is looking for sound information on your area of expertise. Perhaps you're looking for exposure to enhance your reputation or your company's. Maybe you want to educate the market about your line of work so that customers will beat a path to your door. Then again, you may just have a sincere desire to be helpful when it comes to spreading information in your area of expertise. Commit these guidelines to memory, practice them in your dealings with the press,

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Understand your company's media guidelines. If you work for a large company that employs media relations staff, check with them to see how to proceed in an interview with the press. Even though some companies insist that all media requests go through the public relations department, a member of the press still might call you directly. The worst thing you can do is to talk to him before telling him that everything is off the record until you clear it with your PR person. Best to check first.

The same goes for making any deals up front about what's on and off the record. If you want anything you say to be off the record, establish that in the beginning and be specific about what you mean by the term. Can the reporter quote you, just not by name? Can he not quote you at all? Most good reporters will want to talk to you on the record because anonymous sources don't seem credible. If you don't want to be quoted, don't talk to the press in the first place.

Honor deadlines. Reporters on deadline have a reputation for coming across somewhat brusque. Ignore the brusqueness. Find out their deadline, and honor whatever commitment you made to get back to them with information. "If you aren't able to talk to them within the time frame they need or if you aren't interested in responding on a particular topic, give the reporter a courtesy call or e-mail to decline," advises Kristin Bowl, media affairs manager for the Society for Human Resource Management, a trade group in Alexandria, Va. "Ignoring calls is not an option."

Equally important is accessibility, says Matthew Rovner, partner at Ward Rovner & Partners, a public relations, advertising and marketing company in Boston, is to let the reporter know where you are. "You can't be a great resource if no one can reach you," he says.

Know the target market. The best sources

predigest information for reporters. Get to know who their publication's readers are because they are your ultimate audience. "It's up to you to understand who the reporters are going to be talking to," says MacIntyre. "Then tailor the information so that it makes it easy for them to explain it, whether it's to congressional members, kids or moms."

Refrain from using any industry jargon, Bowl advises. Say everything in plain English.

Know when to say, "I don't know." There's



nothing worse than a source who feels the need to talk even when he hasn't a clue what he's talking about. "I try to be as helpful as I can and never try to talk about something I don't know," says Lu Setnicka, director of public affairs for Ventura, Calif.-based Patagonia, an outdoor clothing company.

"If you don't know an answer, say so," says Rovner. "And tell the reporter you'll find out the answer and get back to him in a timely manner. But don't leave him hanging. Call back whether you have the answer or not."

Suggest future topics and let us know what you think about Life Science. E-mail us at lifescience@cio.com.

Point to more resources. As a source, you should be willing to provide other resources to writers whether or not they're likely to agree with your take. Such advice not only helps the writer, says Kay Hammer, founder and CEO of Evolutionary Technologies International, a software company in Austin, Texas, and author of *Workplace Warrior* (Amacom, 2000); it also protects both of you from mistakes. "You don't want to be the source of misinformation and ruin both your and the writer's credibility," she says.

Provide information in context. "You can say: 'Here's not only the juice I'm giving you, but here's why what I'm saying is important,'" says MacIntyre.

Be brief. Try to keep your comments as focused and on point as possible. "Don't ramble," says Rovner. "Try to be as concise as possible. Then stop talking."

Once you decide to become a source, remember that no matter the outcome, you have little control over the final story. "When you are simply the source for an article and not the focus, it's not that important that you are happy with how the information you provided was used—after all, it's not your article," says Hammer.

"Even if you are the subject of the article," she says, "you shouldn't get too concerned with the result. In other words, don't believe your press. If it's good, odds are it is too good, and if it's bad, well, I'm sure you have some redeeming qualities."

Jeffrey L. Seglin (jseglin@post.harvard.edu) is the author of *The Good, the Bad and Your Business: Choosing Right When Ethical Dilemmas Pull You Apart* (Wiley, 2000). He teaches magazine publishing at Emerson College in Boston.



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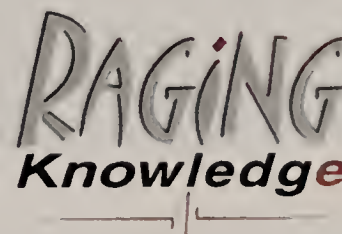
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business travel

Chicago: Living Large

From its architecture to its outlook, this city does everything big

BY ELAINE GLUSAC

Called "The City of Big Shoulders" by poet Carl Sandburg, Chicago boasts everything big. The city is home to 46 museums, 29 miles of lakefront (15 of it beach), 77 neighborhoods, 200 theaters, 7,000 restaurants and the largest population of Poles outside Warsaw. Pack your energy; you'll need it.
(Note: All area codes are 312, unless otherwise noted.)

airports Two airports serve Chicago, both linked to downtown via rapid transit trains (fare: \$1.50) and cabs (minimum fare: \$25). **O'Hare International Airport** (773 686-2200) handles all foreign and major domestic flights. The smaller **Midway Airport** (773 838-0600) on Chicago's South Side is less crowded, but offers fewer amenities.

hotels The **Ritz-Carlton Chicago** (266-1000; from \$455 per

night) bends over backward to please. It goes so far as to provide a computer troubleshooter. The artfully appointed **Park Hyatt Chicago** (335-1234; from \$390 per night) revels in 21st century technologies including DVD players and mini flat-screen TVs beside bed and bath. The 1920 vintage **Drake Hotel** (787-2200; from \$295 per night) is a monument to Old World elegance. **The Hotel Burnham Chicago** (782-1111; from \$170 per night) is Burn-

ham's 1895 Loop office tower refashioned into an architecturally chic inn.

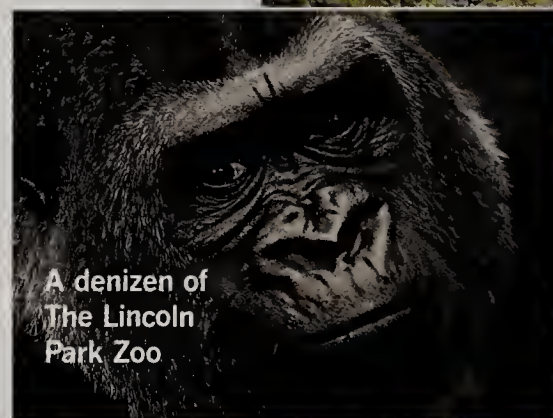
restaurants If you haven't made a reservation at **Charlie Trotter's** (773 248-6228), call for last-minute cancellations. Stylish newcomer **NoMI** (239-4030) in the Park Hyatt Chicago exhibits East-meets-West flair. **Frontera Grill** (661-1434) specializes in worth-the-wait Mexican dishes from celebrated chef Rick Bayless. For exquisite contemporary American fare, snag a seat at **MK** (482-9179). **Gibsons Steakhouse** (266-8999) remains a favorite with the meat-and-potatoes crowd.

CIO-friendly bars/clubs

Four Seasons **Chicago's** (280-8800) clubby cocktail lounge provides a discreet escape from the urban bustle. The living-roomish **Salon** at the Hotel Inter-Continental Chicago (944-4100) entertains with nightly piano jazz. **Bin 36** (755-9463)

pours dozens of wines by the glass. After dinner, duck into the **Jazz Showcase** (670-2473) for heavy vibes, or sample **Metropole**, a convivial cabaret at the Fairmont Hotel (565-8000).

entertainment The venerable **Art Institute of Chicago** (443-3600) houses the largest collection of Impressionist paintings outside Paris' Louvre Museum. **The Steppenwolf Theatre Company** (335-1650), founded by actor Gary Sinise, premieres Giles Havergal's take on David Copperfield (Feb. 1 through March 25). The acclaimed **Lyric Opera of Chicago** (332-2244) alternates Gioacchino Rossini's *The Barber of Seville* with Richard Wagner's *The Flying Dutchman* throughout February.



A denizen of The Lincoln Park Zoo



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PHOTO LEFT COURTESY OF THE RITZ-CARLTON; CENTER BY TONY STONE; LARGE INSET BY THE STOCK MARKET

Lake Michigan affords a full view of Chicago's dramatic downtown architecture.

The frenetic fun house of the Navy Pier



family fun Let the kids loose on **Navy Pier** (595-7437), a former industrial wharf refashioned as an entertainment emporium with a 15-story Ferris wheel, Imax theater, outdoor ice rink and the **Chicago Children's Museum**. Catch the 2 p.m. sea lion feeding at the **Lincoln Park Zoo** (742-2000), or catch the fish at the **John G. Shedd Aquarium** (559-0200). Ogle the world's largest T-Rex skeleton at the **Field Museum** (922-9410).

insider's guide Fork over \$1.50 and enter the arteries of Chicago on the elevated train known as "the L" for a unique view of the city. Hop on the

Brown Line at Chicago Avenue and ride south, defining the downtown loop (get off again on the northbound stop at Chicago Avenue).

weather It's bundle season: Layer up, pack boots, and wear a hat.

maximum: 33.5 degrees

Fahrenheit

minimum: 17.2 degrees

Fahrenheit

mean: 25.7 degrees Fahrenheit

rent or buy Don't bother renting a car in Chicago. There are plenty of cabs, and they don't get lost. For shoe repair, drop your soles at **Brooks Shoe Service** (372-2504), and for alterations and repairs on everything from linen to leather call **Donald and Sons**

CIO'S CORNER:



Patricia Morrison, vice president of information services and CIO of Quaker Oats, raves about Chicago's ethnic eateries. "I really love the diversity," she says, citing **Adobo Grill** (266-7999) for "the best margaritas I've ever had." She recommends **Catch 35** (346-3500) for seafood, **Topolo Bampo** (661-1434) for fine Mexican and **PF Chang's China Bistro** (828-9977) for modern Chinese. You'll have to wait until April to plan one of her favorite outings—Cubs and White Sox baseball games. Until then, "the culture of Chicago is always amazing," including the **Museum of Contemporary Art** (280-2660).

(266-0029). Go designer black-tie at **Modern Tuxedo** (357-6000). Try **Acme Copy Corp.** (922-6742) for reproduction services, **CompUSA** (787-6776) for computer supplies, and **Abcom** (847 895-9393) or **PCR** (847 928-2722) for computer and AV rentals.

other resources

Northwestern Memorial Hospital (926-2000) serves downtown. Both **Walgreen's** (800 925-4733) and **Oscor Drug** (800 654-6726) staff 24-hour pharmacies. For more information, visit the website

www.chicago.il.org, or call the **Chicago Office of Tourism** (744-2400).

calendar The Chicago Auto Show rolls into **McCormick Place** Feb. 9 through 18 (791-7000). The Chicago Bulls, deep into post-Michael Jordan team rebuilding, play several home games, as do the failing-but-fun Chicago Blackhawks. Call **Ticketmaster** for tickets (559-1212).

Elaine Glusac is a Chicago-based travel writer. Reach her at eglu@aol.com.

don't miss

Roll in the aisles at **Second City** (337-3992), the pioneer of improvisational comedy that launched the likes of John Belushi and Bill Murray. Appreciate design-centric Chicago on a walking tour with the **Chicago Architecture Foundation** (922-3432). Trek to the intimate **Green Mill** (773 878-5552), a former Capone-era speakeasy that swings to top jazz headliners like Patricia Barber and Kurt Elling.

fashion

Spectacles? Spectacular!

Trendy eyeglasses are putting a new face on fashion **BY TINA SUTTON**



WHEN WE WERE KIDS, wearing eyeglasses was tantamount to having “Nerd” tattooed on your forehead. Bespectacled boys were usually last to be picked for any team (Can he even see the ball?). And the fate of optically challenged girls was memorably captured in Dorothy Parker’s prefeminist quip: “Men seldom make passes at girls who wear glasses.”

Who’d ever have guessed that eyeglasses would become such a hot fashion accessory, with top clothing designers vying for your ocular dollars?

Women have traditionally been gutsier in their style choices, but men are starting to catch up. For example, visionary media mogul Rupert Murdoch recently traded in both his wife and his eyeglasses for younger, hipper models, while brainiac billionaire Bill Gates switched from the signature owlsh frames that dominated his face to a more contemporary oval shape with a microsofter, quieter feel. All the better to see the future with, my dear.

Optician Felix Balder, who seasonally travels to Paris and Milan to stay on top of the latest eyewear trends, says most people start by asking for the newest looks in frames. “But then they have to decide if they’re really ready to go the high-fashion route or want to pull back a little for a less dramatic, but still modern style,” he says.

Balder sees far more adventurous styling abroad, noting that European men in particular aren’t intimidated by eye-catching colors and designs. He cites the Belgian brand Theo as a prime example of frame creativity; in one of the company’s current men’s collections, the styles are aptly named “Brave,” “Braver” and “Bravest.” These squared-off plastic designs get increasingly bolder, as the names suggest, and feature interesting finishes in noticeable colors with names like jazz brown, Beetle red (after the Volkswagen) and blitz orange, part of a new trend toward the pumpkin family.

Balder mentions the Paul Smith eyeglass collection as being more palatable to American men, reflecting the tailored elegance of the designer’s clothing line. Though less out-there, the styles are no less fashionable, featuring rectangular styles in soft, toned-down colors that draw attention to the face rather than the frames.

For current trends in women’s glasses, certified optician Garo Kelian mentions small, angular frames by Gucci and Donna Karan, cat’s-eye shapes from Calvin Klein, and youthful, square designs in dramatic colors from Tommy Hilfiger. He says women are “freer with colors,” going for reds, blues and tortoiseshell patterns. “For men, blacks and browns are big, with deep blues and maroons looking new,” he says.

Kelian notes that his Boston-based male clients, generally more conservative than cutting edge, are getting a bit more confident in their color choices. They’re starting to buy eyeglass wardrobes to suit a variety of occasions. This includes “serious” rectangular and rimless designs in dark colors like black or charcoal for business, geometric plastic frames in glossy or contrasting colors for a more fashionable look, and subtle tones in brushed metallics or tortoise finishes for casual wear.

Overall for men and women, Kelian says, there is a trend toward smaller frames that are not only more comfortable, but also are better at “keeping the integrity” of the facial features. “People aren’t hiding behind large glasses anymore,” he says. “The look is more subtle, more fun and more accessible.” **CIO**

Tina Sutton is head of Fashion Services, a Boston-based marketing company specializing in fashion and lifestyle trends. She can be reached at fashserv@aol.com.



Four eyes, two looks: Bill Gates goes from frumpy to fabulous.



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Opinion

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Difference Engine

The Social Impact of Technology

High-Tech Scrooges

Despite their newfound wealth, many IT professionals remain stubbornly stingy when it comes to philanthropy

BY PAULINA BORSOOK

AS SOMEONE WHO has studied high-tech's culture for many years, I remain baffled by one particular aspect of this culture, something I like to call the cat-dead-rat syndrome. It works as follows: If a cat loves you, it will give you a dead rat, whether you want a dead rat or not. In high-tech, the same holds true when it comes to philanthropy. Instead of donating money, which is really what most nonprofits need, the high-tech community donates computers.

This metaphor of high-tech cats and their dead rats is about the most benign explanation that can be given for why about 50 percent of corporate giving in high-tech is in kind—that is, stuff—as compared to a national average in other kinds



of businesses of about 12 percent. Never mind that nothing obsolesces faster than high-tech gear. Any IT manager knows that support, upkeep and service cost far more during the lifetime of the equipment than the capital cost of the equipment. And consider the fact that folks ranging from historian Theodore Rozak to University of California-Berkeley professor Cliff Stoll to the recently formed Alliance for Childhood have had smart and knowing things to say about why the use

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of computers in education is at best a not-so-bad idea—if applied in limited doses—to at worst an impediment to the healthy growth of minds, hearts, spirits and bodies.

Financial Anorexia

Silicon Valley has had a cat-and-dead-rat reputation for quite a while now. True, Bill Gates has done a laudable job of setting up the Bill and Melinda Gates Foundation. But it's not as if his doing so has inspired would-be rivals Larry Ellison, Scott McNeally or Jim Clark to keep up.

And these less-than-generous billionaires seem to have a lot of company. While personal wealth in Silicon Valley grew by

ranking poobah in the video games industry) and I were discussing this financial form of snobbery during dinner one night, when he suddenly burst out with, "I make \$175,000 per year, and I still feel like a gas-station attendant!"

We can be amused at the narcissism of cats—and perhaps, that of young children (you know, kids who think a kitten is a fine gift for Dad's birthday)—but it is not so swell in adults or as a defining characteristic of a culture.

Funny Money?

Lots of explanations have been given over the years for this sorry philanthropic state of high-tech affairs: that it's new

money. That it's money made by folks who are still young. That it's funny money—insecure money that might turn to wallpaper when the stock market goes fickle or technology fashion changes. That would-be engineers were scorned by the arty kids when they were in high school, and no way 10 or 20 years later are they going to help their former tormentors or anybody else for that matter. That engineers and MBAs

don't tend to score high on empathic imagination and emotional intelligence, and are suspicious of and puzzled by subjects that can't be quantified (art) or that suggest vulnerability (social services).

There is some truth to all these arguments, but that doesn't excuse this sorry state of affairs or obviate the search for ways to change it. CIOs, for example, know that IT exists in support of a larger mission and is not a goal in itself. So IT leaders might consider using this wisdom next time they are asked to contribute to their community: Is technology what's really needed by that school or nonprofit? Or would time, money and participation really further its goals?

Keep in mind that estate-planning, where you get the tax write-off and the nonprofit of your choice gets the gift, is an excellent way to make sure your money goes where you want it to go, and not to the government.

After all, IT itself exists in an imperfect, interdependent world where people work and live, and no one would need IT if it weren't serving human needs. In a broader sense, we need to be able to rely on each other for help along the way. Whether it's supporting the Red Cross or an after-school music program, we must all share the cost of living in this world. **CIO**

To share your philanthropic tales, contact us at difference@cio.com. Paulina Borsook is the author of *CyberSelfish: A Critical Romp Through the Terribly Libertarian Culture of High-Tech* (Public Affairs, 2000). She can be reached at loris@well.com.



Even in its own backyard, where high-tech likes to trumpet its record of community involvement, there's evidence of what I call psychological-financial anorexia.

\$100 billion from 1991 to 1998, the regional United Way goal remained at a modest \$25 million through the same period. The percentage of corporate philanthropy, expressed as a percentage of profits before taxes, also dropped in that time period. And one-third of the wealthiest Silicon Valley households (those earning \$100,000 per year or more) gave less than \$1,000 per year to charity.

Even in its own backyard, where high-tech likes to trumpet its record of community involvement, there's evidence of what I call psychological-financial anorexia.

Nonprofits such as the nationally renowned Plugged In, which got its start years before the term *digital divide* became fashionable, sought to bring computer skills and Net access to the underprivileged of East Palo Alto, Calif. Plugged In is located—literally—just off the east exit of the main University Avenue/Palo Alto exit on Highway 101. In other words, it's a five-minute drive from the heart of Silicon Valley. And its mission—bringing high-tech to the have-nots of the digital divide—should have a lot of appeal to Silicon Valley corporations. But even Plugged In has had a difficult time raising money, according to *Secrets of Silicon Valley*, a documentary by Berkeley filmmakers Deborah Kaufman and Alan Snitow.

Such miserliness seems to me a peculiar sort of hypocrisy. While people in high-tech like the idea of throwing a computer or website at a charitable cause, they rate each other by money, because they know it's money that really counts and not the accumulation of computer and communications equipment. A good friend of mine (who happens to be a high-

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Crossing the Rubicon

BY ANONYMOUS

THE RUBICON (for the historically challenged), is a small river that flows into the Adriatic Sea, and in Roman times it marked the boundary between Cisalpine Gaul and ancient Italy. In 49 B.C., after some hesitation, Julius Caesar crossed the Rubicon to march against General Pompey in defiance of the senate's orders. In doing so, he committed himself to conquer Rome or to perish trying. Hence the phrase "to cross the Rubicon" has come to mean risking all, taking an irrevocable step.

In 1959, when I was a very young kid living in Southern California, my parents took me to the then recently opened Disneyland. My two most vivid memories are of walking with my father to shake hands with Walt Disney himself, and of gazing at the fabulous improbabilities of Tomorrowland, the 1950s equivalent of Comdex. Tomorrowland as it was in 1959 stands as just another reminder of the axiom that we tend to overestimate technological improvements in the short term, underestimate those improvements in the long term, and occasionally pursue the wrong improvements altogether.

Bell Telephone sponsored an exhibit that proudly demonstrated the "picture phone," a technology, universally accepted



as a future given (think of any movie about a nonapocalyptic future made in the past 50 years that doesn't feature one). And yet, it has been universally rejected as unnecessary, ineffective and distracting by those who have used it, and intrusive and unwelcome by those who occasionally like to hang around the house in their underwear.

Hope springs eternal in some quarters though. *The Asian Wall Street Journal* recently reported that Kyocera Corp. will soon market the Personal Handyphone System, a mobile video-phone that transmits and receives two video frames per second (standard full-motion video is 30 frames per second). Good idea, guys! Microscopic screens featuring the fluid motion of Japanimation.

What happened to the picture phone back then, and what is happening (or not happening) with video conferencing today, serves as an object lesson in the hazards every organization

ILLUSTRATION BY SIMON SHAW

faces trying to identify and deliver technologies and projects that have competitive value for their companies. This, as we all know, can be a tricky and, at times, very frustrating exercise. It demands that we continually reexamine our priorities to make sure we are delivering what the company actually needs to make a real difference instead of what the company, or factions within it, want.

Sometimes you sweat for months, even years, over a mission-critical, complicated, time-sensitive project, executed and delivered flawlessly in spite of budget cuts and personnel shortages, only to earn little more than a yawn from your effort's beneficiaries. Then the next week you do something painfully, embarrassingly simple, almost as an afterthought, like adding a field to some report, and the users are so amazed and delighted they practically carry you around the office on their shoulders. The fundamental unfairness of it all screams for a villain. Fortunately, you often don't have to look very far.

It's getting harder and harder to convince most companies to actually make high-risk commitments.

We tend to ignore the influences that history, economics and even anthropology have on real and perceived value. In the face of the gee whiz effect, we seem unable, sometimes, to look for deeper insights like how or why a particular technology or process might be used, misused or ignored when introduced in a broad continuum of circumstances. Forgotten in the excitement is the hard certainty that all gee whiz is relative, that the value and importance of an idea or project is not measured in its cost, complexity or breathtaking novelty, but in its situational impact on customers, users and the bottom line.

This simple notion speaks volumes about the difficulty of selecting the winners of this year's Enterprise Value Awards. The judges and CIO's staff have gone to extraordinary lengths to fairly and accurately assess value (impact) in selecting the winners, all of whom deserve the recognition they receive. However, it goes without saying that there are thousands of projects out there just as deserving, many of which are comparatively low- or no-profile, low-budget affairs that nonetheless have a profound and profitable impact on the companies they are built for.

God forbid I should get too mushy here, but allow me to congratulate the award-worthy organizations and projects we will never hear about. Here's to their ingenuity, their technical prowess, their dogged belief in an idea and their salesmanship to an often less-than-receptive clientele. Most of all, here's to

their confidence and fundamental bravery, their willingness to cross the Rubicon while so many of their feckless brethren freeze midstream, willing to squander their opportunities for the false promises of outsourcing and packaged solutions.

While the need for this kind of risk taking has never been greater, it's getting harder to convince most companies to actually make these high-risk commitments. In most businesses, there's never been much patience for mistakes, and as things get more demanding, running faster and faster, that impatience is turning inexorably to contempt. Among the more unfortunate byproducts of our accelerating times is that as the gap between thinking and acting shrinks, the confidence, self-awareness, control, expertise and humility that come with laboriously developing unique solutions is vanishing, with unpredictable results.

The way to deliver competitive advantage (value) is to summarily reject canned solutions. Embark on a process of discovery during which you move in a given direction, find yourself at a dead end, back out shaking your head with frustration or disgust, puzzle out why that particular path was wrong and start again. With every wrong turn you figure out more, so every process is an education. The benefit of false starts and ideas that don't pay off is that going through the process of discovery often alerts organizations to unexpected new directions and applications. Like the rigors of evolution, this approach has the happy effect of eliminating solutions that might not be fit enough to survive in the long run and refining solutions that will, one day, propel a company to the top of the food chain.

All of the IT organizations considered for this year's award understand this. They, and the companies that they support, have come to grips with the notion that risk taking is inherently failure prone (otherwise it would be called "sure-thing taking"). If we always knew what we were doing, always knew how long it would take and what it would cost, it wouldn't be IT, it would be...um...accounting!

I have a long and somewhat checkered past when it comes to projects, including my share of rather expensive failures—my picture phones. Some of my failures were a result of betting on the wrong technology, but most were because of the higher risks associated with opting to write custom applications instead of buying software that our competition would also be able to go out and buy. Some of my mistakes cost me bonuses, some promotions and once (very early in my career) my job. I do not have a single regret about any of my decisions. It's hard to imagine a work life of no risks. It's hard for this year's Enterprise Value Awards winners to imagine it too. **CIO**

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High-Tech Help



Gary J. Beach

BY MOST EVERY MEASURE, the global technology industry is dominated by American companies. Though high-tech vendors still need English majors who can write comprehensible sentences for those hard-to-read documentation manuals, what they desperately need are current and future employees who are proficient in math and science.

A recent report on how the United States stacks up against the world in math and science education offered disheartening news. While America's fourth-graders perform well, by the time they get to eighth grade and high school, they drop to the middle of the global pack.

Former U.S. Secretary of Education Richard Riley claims it's not the students' fault. It's the teachers'. Specifically, the problem is an educational system where high school math and science classes are often taught by teachers certified to teach only social studies or physical education.

I recently chaired a review of the computer science courses offered by the Board of Higher Education in Massachusetts. A major recommendation of the review: The business community needs to become proactively involved in teaching math and science. No longer can business leaders passively critique the

mediocre product produced by our nation's schools while bulking up employee payrolls with foreigners who are more proficient in math and science than their young American counterparts.

Quick-fix strategies do nothing to address a systemic problem screaming for systemic solutions—solutions that are likely to deliver results measured in years rather than quarters.

But there is hope. While science classrooms may be led by men and women certified to teach only social studies, conversations with CIOs have convinced me that there are tens of thousands of certified computer science majors yearning for social fulfillment. All they need is for someone to ask them to help.

Imagine the impact of a massive tutoring program—not unlike the Peace Corps—where companies would lend their best science and math employees to school systems across America. The result: Long-term programs aimed at keeping our country's science and math teachers on the cutting edge of their fields, and long-term programs aimed at ensuring that corporate America will have a home-grown competitive workforce.

The future of our country's continued dominance of the high-tech sector depends on making these connections happen.

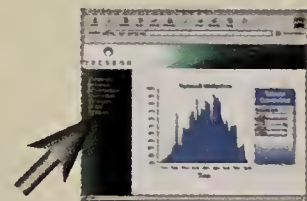


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REPRINT SERVICES

RMS 717 399-1900, ext. 123; e-mail

bmolloy@rmsreprints.com

For further sales information, visit

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CIO is published in the United States as well as in:

Australia, CIO Australia

P.O. Box 295, St. Leonards, NSW 2065, Australia

61-2-9439-5133; www.idg.com.au

Canada, CIO Canada (monthly)

CIO Enterprise Canada (biweekly)

Laurentian Technomedia Inc., 55 Town Centre Ct.

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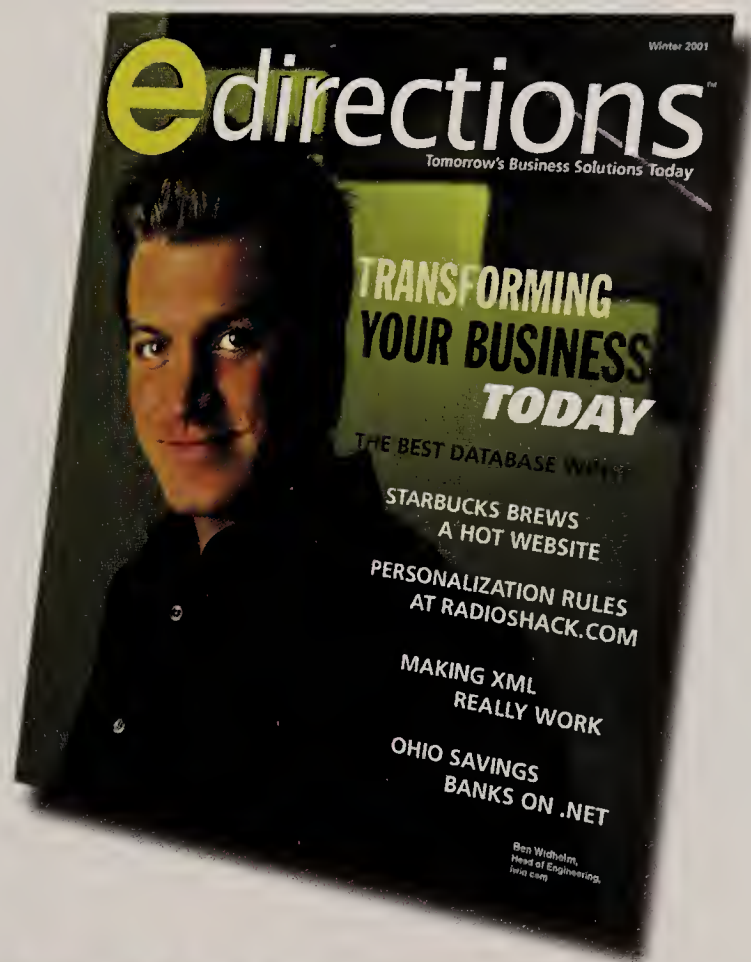
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492 Old Connecticut Path, P.O. Box 9208,
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508 872-0080.

Postal Information: CIO (ISSN 0894-9301) is

published semimonthly; and as a combined
issue December 15/January 1 by CXO Media
Inc., 492 Old Connecticut Path, P.O. Box
9208, Framingham, Massachusetts 01701-
9208. Periodicals postage paid at
Framingham, Mass., and at additional mail-
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Interview

BY ALISON BASS

JOHN Barrows

John Barrows is founder and president of Blue Wolf Network, an Internet software company in Portland, Ore. Two years ago, he created a software tool called Prudence, which let parents see where their children were surfing on the Web. But in the past 12 months, Barrows, a parent himself, has declined to upgrade Prudence for a rather unusual reason: ethical considerations.

CIO: I understand retail outlets are still selling Prudence, but you have chosen not to improve the package to make it competitive with similar tools. Why?

Barrows: I've lost interest in developing tools like Prudence because they are being used in ways I don't like. There are companies that are installing software like this to spy on their own employees. There are parents who are using it to spy on their children and wives using it to spy on their husbands and vice versa. I never intended Prudence to be a tool for people to use to spy on each other. Maybe the FBI has a right to spy on people—maybe it doesn't—but I don't want to be part of it.

Why then did you develop Prudence in the first place?

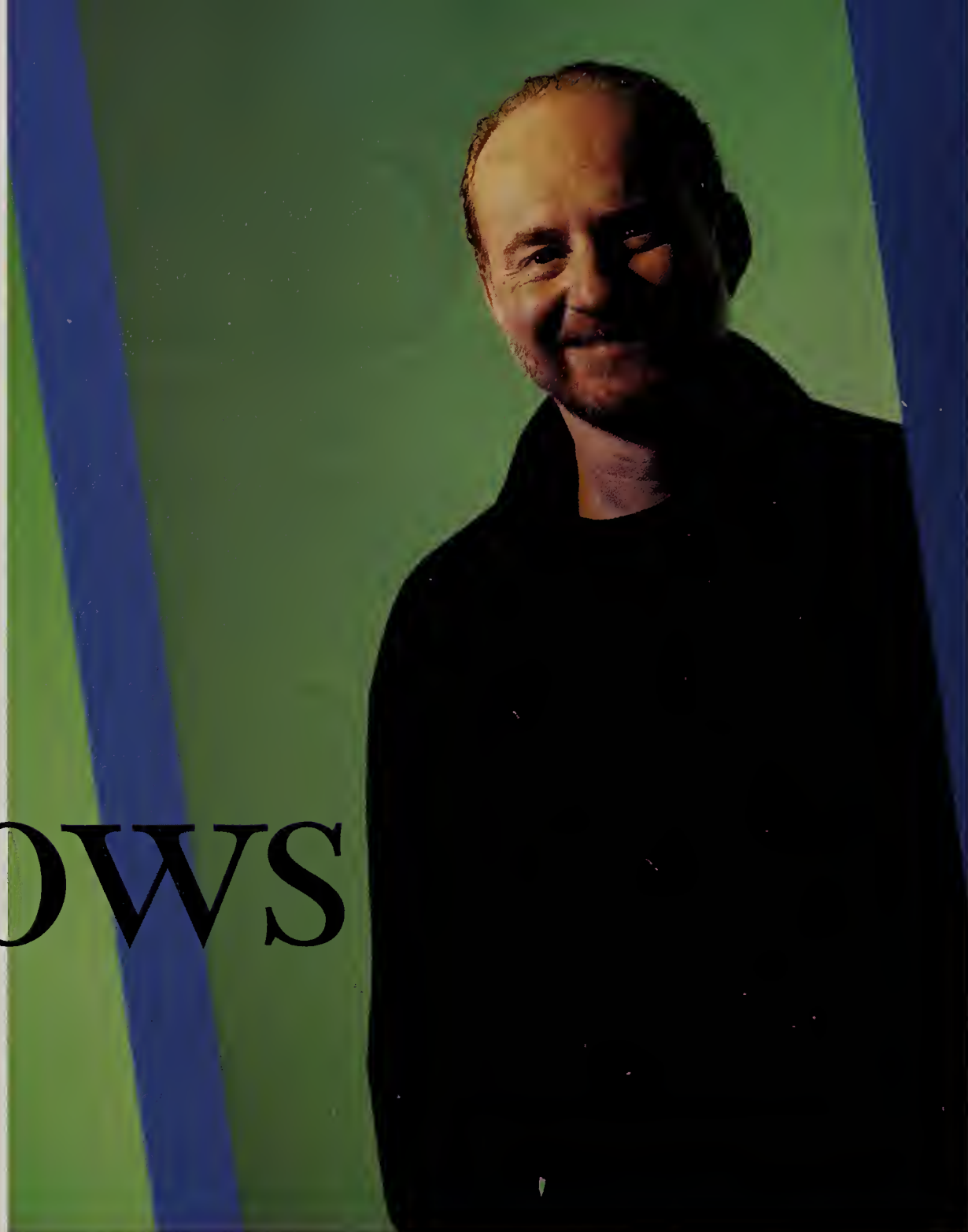
At the time, there was a lot of debate about kids having easy access to pornography sites on the Web, and I wanted to do something about it. My idea was not to filter stuff, which is akin to censorship, but to allow a parent to see what their child was doing and to say to their children, "I have the ability to monitor you; here are the rules and if you don't follow the rules, I have the ability to restrict your access to the Internet." I thought parents would use it responsibly. But what I'm finding is that parents are spying on their kids and not telling them. And I totally disagree with that.

So if you're not upgrading Prudence, will it become obsolete? And can your company afford that?

Yes to both questions. Prudence is losing in

the competitive battle because there are other products out there that are more upgraded. And that's fine with me. I've moved on to develop different business products. For instance, I've launched one Internet startup that is an e-commerce site that sells boating supplies online, and I am starting another software company whose product allows digital movies to be streamed into hotel rooms. It's not like I'm running a multimillion-dollar business that depends on one software package. This is a small business, and because it's my own, I can make decisions that tie in with my own personal ethics. **CIO**

Senior Editor Alison Bass finds decision making based on principle over profit refreshing. How about you? Send your thoughts to interview@cio.com.



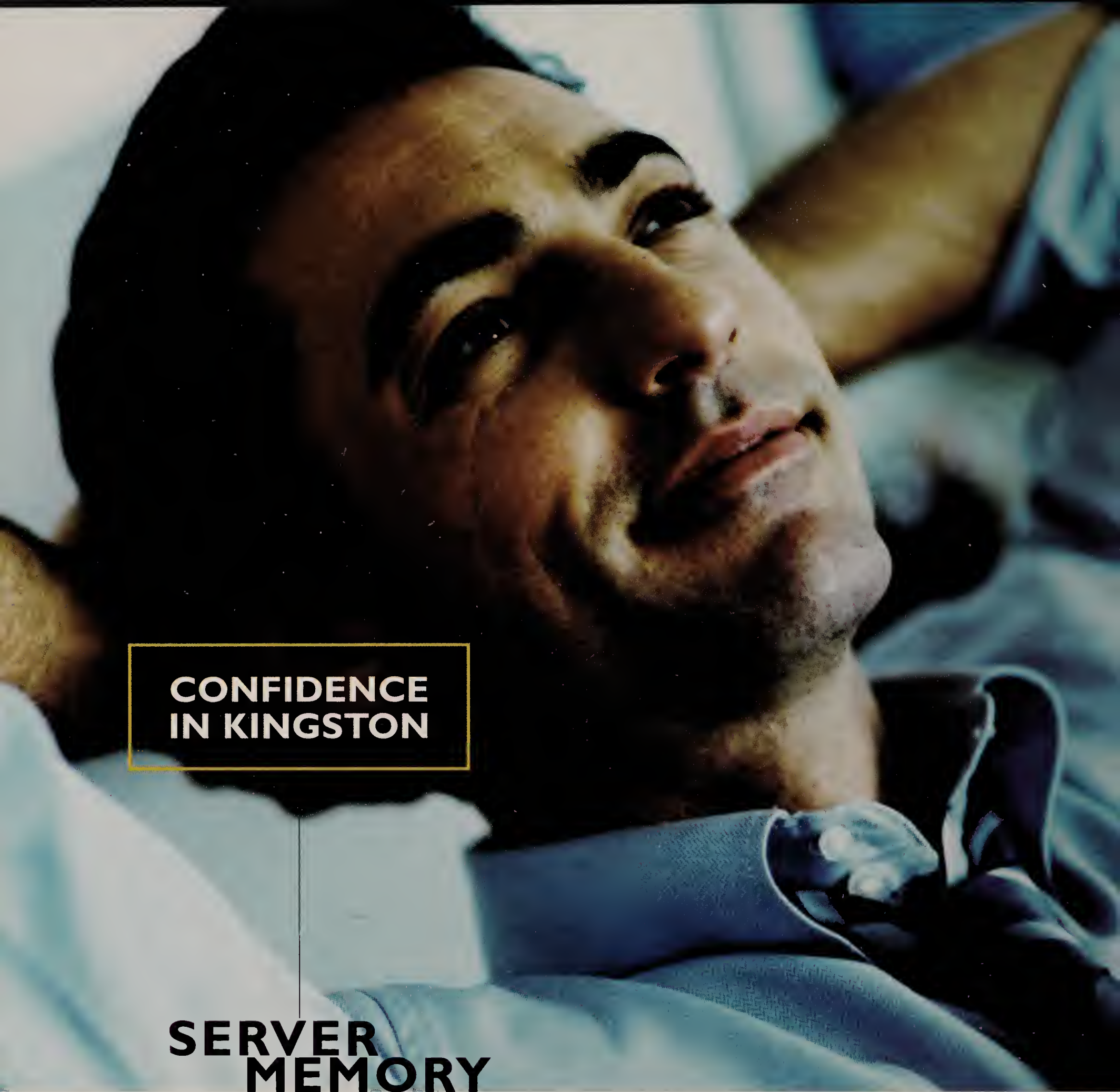
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